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ECONOMIC RESEARCH AID

FREIGHT TRANSPORTATION RATES IN THE USSR



CIA/RR A.ERA 60-2

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CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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FOREWORD

The purpose of this research aid is to examine freight tariffs in the various types of inland transport in the USSR; to compare their forms, levels, and purposes; and to determine their intended effects on the economy of the country. For each type of transportation, current Soviet and US tariffs and their application are compared. In order to establish a uniform basis for comparing individual railroad rates, unit averages of revenue as applied to actual traffic are compared before dealing with rate structures for individual commodities. The year 1955 was selected because sufficient data have become available for that year to permit reasonable conclusions. Where 1955 figures were not available and comparable figures could be obtained for the years immediately before or after 1955, the latter were used. For inland water transport the current tariff became effective in 1957. Movement of freight by rail constitutes the greatest single share of all freight traffic both in the USSR and in the US, and hence the part of this research aid covering railroad transport rates is in considerably greater detail than that dealing with the rates of other types of transportation. Also, information on rail tariffs is more exact and meaningful than is information on the rates charged by other types of inland transport.

Tariff rates and rate structures in transportation as a rule are complicated, and a thorough discussion of all that is known would entail the risk of confusing the reader by a mass of details and ramifications. An effort has been made, therefore, to arrange related data in such a manner as to reflect the general pattern of rates and economic objectives and to describe the main features of the tariff schemes in simple and direct terms.

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FREIGHT TRANSPORTATION RATES IN THE USSR*

Summary

The rates governing the transportation of freight in the USSR are set at levels calculated to provide adequate compensation to the different carriers. The rate structure as a whole is designed basically to promote the objectives of national planning through complementary rather than competitive transportation services and at minimal expense to the economy. Nevertheless, the general ratemaking practices, established by decree in the USSR, are similar in many respects to those that have developed under regulated competition in the US.

In 1955, railroads accounted for 88.6 percent of the internal freight movement of the USSR compared with 47.6 percent in the US, where inland waterways, highways, and petroleum pipelines are used more extensively. Unit revenues on Soviet railroads now amount to about 4 kopecks** per ton-kilometer compared with approximately 1 cent per ton-kilometer on the railroads of the US.

At various times since 1926 the operations of the Soviet railroad system have resulted in financial losses, and the state has had to underwrite the deficits. During 1942-48, losses were incurred as the result of inflationary pressures of wartime on railroad costs without attendant increases in rates. At the beginning of 1949 a policy was established of so revising the rate structure as to enable the railroads to show a margin of profit at current levels of traffic. In subsequent years, with appreciable increases in annual movement and an investment program aimed at reducing operating costs, the railroads have been able to reduce rates several times and still continue to show improved profits.

A comprehensive tariff, which was put into effect on 1 July 1955, sets the pattern of rates that is now being followed in rail transport of freight in the USSR. This tariff recognizes relative shipment costs by imposing relatively high weight-distance rates for

* The estimates and conclusions in this research aid represent the best judgment of this Office as of 1 February 1960.

** One hundred kopecks equal 1 ruble. Except where otherwise indicated, ruble values in this research aid are expressed in current rubles and in comparing rates may be converted to dollars at the rate of 4 rubles to US \$1. This rate of exchange, however, does not necessarily reflect the dollar value in other types of comparisons.

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short hauls and small shipments and lower rates for long distances and carload shipments, as is the practice in the US. The level of rates for heavy bulk commodities and industrial goods is generally low and that for consumer goods and gasoline comparatively high. There is a remarkable correspondence between the rate curves established by this tariff for individual commodities and the rate curves that have developed in the US, but the charges and profits on middle-distance hauls tend to be somewhat lower and those on short and long hauls slightly higher than those in the US, a variation that some Soviet transportation economists view as a weakness in the Soviet rate structure. The Soviet tariff, moreover, provides for allowances and exceptions to support the economies of remote areas, to stimulate new traffic needed to complement light or empty movements, and in the open-water season to substitute part inland water movement for all-rail hauls. Extra charges* also are imposed to restrict traffic to specific zones or economic marketing areas, to divert it to other types of transportation, or to discourage it altogether.

On the inland waterways of the USSR the current rates, which were established in a tariff effective 1 January 1957, are lower than comparable railroad rates, and where parallel rail facilities exist, exceptional rate differentials favoring rivers have been prescribed to encourage shippers to make the maximum use of inland waterways. The costs of inland water shipping, however, are higher than those in the US, because the climate is less favorable and the level of technical development lower. In addition, Soviet accounting assigns the costs of improving and maintaining the waterways to the lines using them, whereas in the US these costs are absorbed by the government.

To conserve transportation effort, motor vehicle rates in the USSR are set much higher than railroad rates for medium and long distances but are more competitive for distances of less than 50 kilometers (km). In some instances, rates on parallel rail hauls for short distances are arbitrarily increased. Like the rail and inland water tariffs, the motor vehicle tariff does recognize the principle of declining unit rates with increasing lengths of haul, but all unit rates level off at 100 km. The tariff provides four differentials based on efficiency of space utilization, the most densely packed freight receiving the lowest tonnage rates. To encourage efficiency in other respects, a few exceptions are permitted. Surcharges are levied in cold regions and mountainous areas.

Because motor vehicles are used primarily for intracity hauls in the USSR, the rates for this service are not readily comparable with motor vehicle rates in the US, which are published only for intercity traffic. When applied to the US average length of haul for common

* See II, D, p. 9, below.

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carriers (378 km), the Soviet rate is 2.83 times as great as the US average. Motor vehicle rates in the US have tended to average out only slightly above costs because of competition resulting from relatively cheap and plentiful vehicles and fuels, good roads, and the presence of private carriers in the field.

The need for pipeline rates for the movement of petroleum in the USSR is obviated by the fact that the pipelines are owned by the Ministry of the Petroleum Industry. It is estimated, however, that in 1955 in the USSR the cost of moving petroleum products by pipeline was from one-fourth to one-third the cost of moving them by rail and that the cost of moving crude oil by pipeline was one-seventh to one-sixth of rail costs. Moreover, oil pipeline costs in the USSR may have been as much as three to four times oil pipeline costs in the US in the same year, but this relationship probably is distorted to the disadvantage of the USSR by technical and accounting factors of a temporary nature.

I. Introduction

Revenues from freight service averaged 76.6 percent of the total operating revenues of Soviet railroads during 1950-55. These revenues are derived from the movement of freight over the railroad lines and from the provision of certain ancillary services associated with the movement of freight, such as special loading and unloading, icing or heating of perishables, and switching. Charges for freight service are contained in a tariff, and, like customs duties, the rates and charges in the tariff can have the effect of promoting, facilitating, discouraging, or blocking the movement of specific types of traffic and of traffic as a whole.* Such charges also are the principal influence on the financial position of the railroad enterprise.

During 1942-48 the inflationary pressures of World War II and of the subsequent period of reconstruction and arms modernization resulted in increased costs of railroad operation. Except for the abolition of special reduced rates and exemptions, however, the 1939 tariffs were maintained in force throughout the war and up to 1 January 1949, resulting in substantial deficits and in the necessity for state subsidies to maintain operations. On 1 January 1949 the

* Insofar as possible in this research aid, the word rate is used to apply to unit rates (that is, rates per ton-kilometer), and the word charge is used to apply to flat amounts billed for movement of a given quantity of freight over a specific distance or to amounts billed for arbitrary purposes, extra services, demurrage, and penalties.

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USSR introduced a revised tariff that included rather drastic increases in rates. By this time it had been decided that the railroads should no longer be permitted to operate at a loss. Net earnings for the railroads resulted immediately from the drastic increase in rates. With continued growth of traffic and the introduction of new measures to reduce costs through new investment and operating controls, it was possible, however, for the USSR to make downward freight rate adjustments five times during 1950-55, amounting to a total of 30 percent. The railroads have continued to show a net operating profit from freight service. During 1950-55, there was a fairly constant annual increase, as shown in Table 1.

Table 1

Operating Ratios in Railroad Freight Service
in the USSR ^{a/}
1950-55

<u>Year</u>	<u>Percent b/</u>
1950	89.2
1951	82.5
1952	87.5
1953	81.7
1954	74.4
1955	69.2

a. An operating ratio is an index that is commonly used in transportation analysis and is derived by dividing operating expenses by operating revenues.

b. ^{1/} (For serially numbered source references, see Appendix C.)

Although the railroads of the USSR have operated profitably since 1949, these profits have not acted as a deflationary influence on the economy, because there have been concomitant large capital expenditures on the railroads and in other sectors that have offset the deflationary influences of large profits. Even with the heavy capital investment required for the dieselization and electrification programs, which will extend through 1970, and the accompanying investment required for improvements to roadbed, yards, and signaling, it is probable that the state will be able to draw off appreciable amounts of net railroad operating profits and put them to uses other than those associated with the railroads unless further substantial rate and wage concessions should be granted. Current publications

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of economists of Gosplan and the Soviet railroads, however, indicate that rates are to remain at substantially the level established at the time of the last reduction on 1 July 1955 and that profits as planned make allowance for reasonable wage increases. Over-all costs for railroad freight service should decline as progressively greater technical improvements begin to influence operations.

II. Railroad Freight Rates and Charges in the USSR

A. General Considerations

The present railroad freight tariff in the USSR is specified in a tariff handbook 2/ that was issued by the Ministry of Railroad Transport and became effective on 1 July 1955. This tariff is an updated and presumably improved version of other recent Soviet tariffs. It is constructed on the basis of a number of class rate patterns or schemes to which all freight items including bulk commodities are related by groups of commodities or by single commodities. Each rate pattern for carload shipments is expressed in rubles per carload for cars of different tonnage capacities -- and, in numerous instances, for different types of cars -- in a series of zones extending from a zone of less than 50 km to a zone of 13,301 to 13,500 km. For a sample page of the railroad freight tariff, see Figure 1.* The tonnage rates for shipments of less-than-carload size are higher than those for carload shipments by as much as 90 percent for shipments of less than 1 metric ton,** 80 percent for shipments of from 1 to 2 tons, and so on. On a unit and distance basis, all rates begin high for short movements and follow a tapering-off curve for longer distances. Most freight rate curves eventually flatten out -- that is, the rate per ton-kilometer becomes fixed beyond a certain distance. Rates on some commodities, however, are deliberately advanced on extremely long hauls as a means of discouraging expensive and uneconomical movements.

The USSR regards the 1 July 1955 tariff as serving the following two basic purposes: (1) to bring the price for freight service closer to costs and (2) to stimulate economy in the use of transportation facilities. The basic tariff, therefore, provides for high rates on small shipments for short distances and low rates on large shipments for long distances. Through prices charged, it also attempts to encourage practices and traffic patterns that combine economy in the use of transportation with economic exploitation of resources in the furtherance of over-all objectives of the

* Following p. 6.

** Unless otherwise indicated, tonnages are given in metric tons throughout this research aid.

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state. In a similar manner this tariff discourages uneconomical transportation practices. In addition to the basic tariff rate, there are special rules for the application of exceptions, arbitraries, extra charges for various services, fines, penalties, and demurrage charges. These rules illustrate more specifically the over-all objectives of the system of tariffs.

B. Exceptions

The current railroad tariff in the USSR has many exceptions and special rates, the most important of which are granted with the following objectives. Exceptions to the basic tariff are intended to stimulate industries in specific areas and to develop traffic on nonpaying hauls (empty directions). Exceptions also are intended deliberately to divert traffic from one route or type of transportation to another. On the long hauls eastward across Siberia, these exceptions are intended to assist in holding down the high cost of commodities delivered in the Far Eastern areas. Exceptions also are provided in order to assist in the development of new basic industries and the promotion of the use of new products such as mineral fertilizers. It is appreciated by Soviet authorities that the transportation rate structure can always be employed as an aid in planning and adjusting patterns of distribution of materials, although the Ministry of Railroad Transport clearly prefers that the original planning be done on the basis of rational, correctly priced hauls. 3/ Some specific examples follow.

1. Coal from the Moscow Basin is accorded a rate 40 to 50 percent below the rate for other coal. This reduction is to enable the low-grade coal of this area to compete with coal from the Donbas and other coals that have much higher calorific values. Coal from the Moscow Basin can travel 1,500 km before exceeding the limit of normal haul* and incurring the concomitant increase in the rate per ton-kilometer. 4/ The railroad no doubt loses on this movement, but an economic saving may accrue to the state in that large quantities of coal from other basins are unlikely to move for longer distances in substitution for coal from the Moscow Basin.

* In the Soviet rate curve for each of a number of commodities, there is a range of distance referred to as the "distance of normal haul" or the "distance of normal movement" (normal'noye rasstoraniye perevozki), which generally has the lowest unit rate on the curve. Beyond the upper limit of this range (the "limit of normal haul" -- pridel'no normal'noye rasstoraniye perevozki), the rate per ton-kilometer is increased, and the rate curve turns upward accordingly (see III, C, 3, a, p. 17, below).

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USSR: Sample Page of Railroad Freight Tariff of 1955

км 761—1200

ПЛАТА В РУБЛЯХ

№ с/м	За вагон подъемной силой	761 800	801 840	841 880	881 920	921 960	961 1000	1001 1050	1051 1100	1101 1150	1151 1200	№ с/м
	1	2	3	4	5	6	7	8	9	10	11	
16	До 18 т	468	477	486	495	504	513	523	534	546	557	16
16	20 т . .	548	558	569	579	590	600	612	625	639	652	16
16	40—60 т	1096	1116	1138	1158	1180	1200	1224	1250	1278	1304	16
17	До 18 т	467	496	525	554	583	611	644	680	720	763	17
17	20 т . .	546	580	614	648	682	715	753	796	842	893	17
17	40—60 т	1092	1160	1228	1296	1364	1430	1506	1592	1684	1786	17
18	До 18 т	442	464	487	510	532	555	580	609	637	665	18
18	20 т . .	517	543	570	597	622	649	679	713	745	778	18
18	50—60 т	1293	1358	1425	1493	1555	1623	1698	1783	1863	1945	18
19	До 18 т	496	521	547	572	598	623	652	684	715	747	19
19	20 т . .	580	610	640	669	700	729	763	800	837	874	19
19	50—60 т	1450	1525	1600	1673	1750	1823	1908	2000	2093	2185	19
20	До 18 т	516	538	559	580	602	623	647	674	700	727	20
20	20 т . .	604	629	654	679	704	729	757	789	819	851	20
20	50—60 т	1510	1573	1635	1698	1760	1823	1893	1973	2048	2128	20
21	До 18 т	830	866	902	937	973	1009	1052	1103	1155	1206	21
21	20 т . .	971	1013	1055	1096	1138	1181	1231	1291	1351	1411	21
21	50—60 т	2428	2533	2638	2740	2845	2953	3078	3228	3378	3528	21
22	До 18 т	413	421	429	437	444	452	461	471	481	491	22
22	20 т . .	483	493	502	511	519	529	539	551	563	574	22
23	До 18 т	977	1024	1072	1120	1168	1216	1269	1329	1389	1448	23
23	20 т . .	1143	1198	1254	1310	1367	1423	1485	1555	1625	1694	23
23	50—60 т	2858	2995	3135	3275	3418	3558	3713	3888	4063	4235	23
24	До 18 т	478	505	533	560	587	614	645	679	713	747	24
24	20 т . .	559	591	624	655	687	718	755	794	834	874	24
25	До 18 т	226	236	247	257	267	278	290	303	316	329	25
25	20 т . .	264	276	289	301	312	325	339	355	370	385	25
25	ПЛ 30—60 т	396	414	434	452	468	488	509	533	555	578	25
25	КР, ПВ 50 т . .	660	690	723	753	780	813	848	888	925	963	25
25	КР, ПВ 57—60 т	792	828	867	903	936	975	1017	1065	1110	1155	25
26	До 18 т	732	773	814	855	896	936	982	1033	1084	1135	26
26	20 т . .	856	904	952	1000	1048	1095	1149	1209	1268	1328	26
26	КР 50—60 т	2140	2260	2380	2500	2620	2738	2873	3023	3170	3320	26
26	ПВ 57—60 т	1926	2034	2142	2250	2358	2464	2585	2720	2853	2988	26

In this typical page of the Soviet Railroad Tariff of July 1955, the number of the scheme or class-rate pattern appears in the extreme left-hand and right-hand columns. The patterns are listed in numerical order and are repeated from two to five times to correspond with cars of varying types and capacities as shown in Column 1. (The abbreviations PL, KR, and PV refer, respectively, to flatcars, boxcars, and gondola cars.) The remaining columns are headed by ranges expressed in kilometers, and for each range the basic charge is given on the line of each class-rate subdivision in rubles for a full carload. The unit rate per ton-kilometer would be obtained by dividing the charge by the product of the car capacity (assuming a fully loaded car) and the length of haul. The latter may be taken either as the actual distance of movement (when known) or, for theoretical purposes, as the midpoint of the range. Ranges for which rates are quoted vary from 50 km and less to 13,301–13,500 km. In other portions of the tariff, individual commodities and commodity groups are indexed to the class-rate patterns.

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2. Peat briquettes and cement clinkers receive 20-percent discounts from ordinary rates for loose peat and packaged cement, respectively. Mineral fertilizer receives a 40-percent discount on shipments to all state enterprises, 5/ and thus individual users or consumers who have to pay the full rate are placed at a disadvantage.

3. There are a few reduced rates for hauls in the "empty direction." A good example is a 50-percent reduction in the rate for moving rock ballast from the Sverdlovsk Railroad System to the Omsk Railroad System (in otherwise empty gondola cars that must be returned from the Urals to the Kuzbas for westbound loading of coal). Eastbound ore from Magnitogorsk receives a 10-percent reduction, although this particular exceptional rate seems to be obsolete. There are other 50-percent reductions in rates for hauls in the "empty direction" on the Orenburg, Karaganda, and Turkestan-Siberian Railroad Systems. Mineral construction materials moving northward on the Pechora Railroad System receive a 30-percent reduction. 6/ In addition, the Ministry of Railroad Transport can establish reductions below the general rate level of up to 25 percent for freight moving in empty directions, but this power has not been much used. 7/

4. One of the most notable Soviet rate exceptions is that on long-distance shipments on the Trans-Siberian Railroad. Deductions range from 1 to 40 percent and bring the rates down to levels close to the long-distance minimum for such goods as agricultural equipment and chemicals along with vegetables, fruits, meat, butter, wines, textiles, and other consumer items moving from west to east. On movements of salted and smoked fish from Sakhalin and the Soviet Far East to the west, a reduction of 50 percent is permitted. 8/ These low rates support the economy of a remote region of the USSR that otherwise would receive less than normal prices for what it had to sell while it paid more for its needs. The traffic probably is more than compensatory to the railroads, for the exceptions apply mostly to rates that were high to begin with. Wheat and petroleum are not included in the list of exceptions. The USSR has established a zone pricing system on petroleum that apparently forces the petroleum industry to absorb some of the cost of shipment rather than passing it all on to distant consumers.* In the case of wheat, the reason for not permitting a reduction is that the wheat rate is already low, and efforts are continually being made to promote the development of new wheat lands in distant deficit areas.

* Prices in zones nearer oilfields allow for profit margins above shipping costs, which offset losses incurred on long hauls to remote areas or zones.

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5. In order to promote the use of new coal mining areas, there is a 20-percent reduction for local distribution of coal originating in basins that have been developed since 1 January 1952. 9/

6. In the open season for inland waterways, shipments in mixed rail and water transport receive a 30-percent reduction from published rail tariff rates for the rail portion of the journey. The reduction of 30 percent on the rail haul is limited to a distance of 600 km between water stretches. 10/ This exception appears not to apply to mixed rail and water movements involving Sakhalin Island.

C. Arbitraries*

The Soviet railroad tariff system has many rules that require the imposition of arbitraries. Arbitraries are imposed to divert traffic from some routes and to prevent it from moving beyond fixed limits on others.

One type of arbitrary is designed to force bulk freight movements from the railroads to the inland waterways as long as the weather permits. In the open water season, for instance, railroad rates on coal are increased 50 percent (between 1 May and 30 September) on shipments from the Donbas to points on the Volga and Dnieper River systems. 11/ Between 15 March and 1 December (most of the year), railroad rates on coal are increased 50 percent from the Donbas to points on the Sea of Azov and the Black Sea. An initial attempt to develop traffic on the Pechora River has been made by raising railroad rates 20 percent on coal from Vorkuta to points on the Barents Sea and the White Sea via all-rail movements between 1 May and 30 September. Similar arbitraries are applied to the movement of grain, timber, cotton, firewood, ore, petroleum, salt, construction materials, and other items in the open season on rail hauls parallel to the Volga, Kama, Dnieper, and Irtysh Rivers; the Moscow Canal; and other waterways, such as the Caspian and Black Seas. 12/

Another type of arbitrary is applied the year round to discourage distribution of commodities outside the predetermined limits of specific marketing areas. Usually these supplemental rates are intended to restrict the hauls to relatively short movements, but the rates sometimes permit long movements also. Examples of this type of arbitrary are an increase of 50 percent on coal (other than Bukachacha coal) originating on the Trans-Baikal Railroad System and moving to the East Siberian or Far East Systems and an increase

* An arbitrary is an amount added to a regular rate for a particular reason.

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of 50 percent on Kuzbas coal bound farther south than Alma-Ata on the Kazakh Railroad System.* 13/ Donbas coal also receives a 50-percent arbitrary increase when moving beyond an area that is bounded roughly by Leningrad on the north and the Volga River on the east. 14/

Arbitrariness of 50 percent as a rule are employed to discourage rail movement of petroleum between points adequately served by pipelines. Local movements are permitted without the additional charge. Increases of 50 percent are applied also to restrict the production of certain petroleum centers to prescribed marketing areas. 15/ Thus Groznyy and Ishimbay, for each locally refined product, are given marketing areas that can be served by rail without incurring the extra charge. The balance of the petroleum is expected to move out by pipeline either as a refined product or as crude oil to be refined. Rates on firewood are increased 50 percent for distances of more than 500 km except when shipments are destined to the wood-deficient areas of Kazakhstan, Central Asia, and the Ukraine. 16/

Other commodities incurring arbitrariness for moving beyond the limit of normal haul are coke, ore, cement, and lumber. Brick is limited to 300 km and sand, earth, and clay to 150 km in the same manner. 17/ Assembled automobiles originating at plants or repair shops receive a 50-percent arbitrary increase for distances up to 300 km to oblige driveaways to points within a reasonable distance. 18/ There is a special rate 50 percent above the normal rate for delivery of all goods originating in the Moscow and Leningrad terminal areas and shipped for distances of less than 30 km. 19/

There are said to be numerous instances where exceptions and arbitrariness overlap -- that is, counteract each other. Soviet authorities on transportation rates generally agree that these corollary adjustments need considerably more study and refinement in equating the tariff structure with transportation costs and the needs of the economy.

D. Extra Charges

The Soviet freight tariff contains other extra charges (extras) too numerous to describe in detail, but a few appear to be worthy of mention.

* The former main line of the Turkestan-Siberian Railroad System is now incorporated in the Kazakh System.

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1. Switching Charges

A switching charge for taking cars in and out of the sidings of enterprises amounts to 10 rubles per locomotive-kilometer, with a minimum of 30 rubles per trip. 20/ Movements on the South Sakhalin Railroad (narrow gauge) are charged the general tariff rate with an increase of 200 percent. 21/ Other narrow-gauge railroads, in spite of unit costs much heavier than those for standard-gauge lines, use the general rates.

2. Charges for Large Cars

Where the type and capacity of railroad car appropriate to a class of freight in the USSR are not specifically stated in the class rate schedule applicable to the goods being shipped, charges for using cars of more than 20-ton capacity are calculated by adding to the carload charge the following increments: for cars of more than 20-ton capacity through 25 tons, 25 percent; for cars of more than 25 tons through 30 tons, 50 percent; and for cars of more than 30 tons through 60 tons, 100 percent. For cars above 60 tons, each 20 tons of capacity or less is charged for by adding a full carload charge. 22/ As the tonnage rate will remain about equal, it is apparent that this charge will constitute an extra mainly in the case of light, bulky manufactured goods. Large movements of heavy commodities in through trains (marshruts) will scarcely be affected by it.

3. Improper Payments

Under the Soviet system of payments, the shipper generally pays the freight charge in advance, supposedly including it in his price to the consignee. For failure to pay the freight costs on consignment, the shipper is charged an extra of 1 percent of the freight bill per day of delay in payment, starting with the day following the date of shipment. 23/

4. Loading, Unloading, and Transloading Charges

Loading, unloading, and transloading on Soviet railroads are charged for at rates varying from 4 rubles to 5 rubles per ton on carload lots and 6 rubles per ton on less than carload lots, when the service is performed by the railroad. Charges are levied for weighing at the start of the journey and for checking weight at its conclusion, varying from 3 rubles to 10 rubles per car. 24/

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5. Servicing Charges

Services for which the Soviet railroad system commonly charges include disinfection and cleaning of cars 25/; precooling of cars; refrigeration en route; heating 26/; and cleaning of cars on completion of shipment, the last normally being billed to the consignee.

6. Fines and Penalties

Fines are assessed against shippers in the USSR for giving wrong directions for the billing of freight that result in less income for the railroad. These fines are assessed at 150 rubles per car regardless of capacity and at 20 rubles for less-than-carload shipments. 27/ A penalty is levied for storage in railroad facilities after the expiration of a regular time allowance or "free time." This penalty starts at 1 ruble per ton per day and increases at a rapid rate on succeeding days. 28/ Penalties also are levied for routing freight along paths or in directions that result in cross hauls: for example, there is a 50-percent rate increase on ferrous metals from any line east of the Tomsk Railroad System to the Tomsk System or to any line west or south thereof. 29/ It is believed that this penalty is not intended to apply to ferrous scrap.

7. Demurrage

Demurrage on Soviet railroads is charged for at the rate of 3 rubles per open or standard closed 4-axle car per hour for the first 6 hours over the allowable time, 6 rubles per hour for the next 6 hours, 9 rubles per hour for the third 6 hours, and 15 rubles per hour for all time in excess of 18 hours. These charges are doubled for delay of tank and refrigerator cars. 30/

III. Comparison with Railroad Freight Rates and Charges in the US

A. General Considerations

1. Railroad Freight Tariffs in the US

The US, unlike the USSR, does not have a unified or consolidated tariff that can be consulted in order to find rates which can be applied for the movement of specific types and amounts of freight traffic between various points and distances. In the US, there are about 75,000 freight tariffs, ranging in size from a single page to more than 1,200 pages. 31/ This condition results from the fact that the basic function of ratemaking

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rests with the individual railroads. Rates and charges for freight service are filed by railroads or on their behalf with the Federal Interstate Commerce Commission (ICC) and with the various state transportation regulatory commissions. State regulatory bodies have the prerogative of influencing rates on intrastate movements as long as there is no discrimination against interstate commerce, but final approval in the event of dissension on the fairness and reasonableness of any rate or rate schedule affecting interstate commerce or the maintenance of an adequate national system of transportation rests with the ICC or the courts. The ICC may also prescribe rates and rate schedules.

Approximately 85 percent of the movement of carload traffic, which makes up the bulk of the railroad freight traffic in the US, is governed by the thousands of commodity tariffs that contain rates and charges for the transportation of specific commodities between specified points on the transportation system. Traffic in commodities and traffic between points for which there is no applicable commodity tariff is governed by the Uniform Freight Classification tariff, which maintains a reasonably uniform rate level for the country as a whole. Because only a small part of US railroad freight traffic is governed by the Uniform Freight Classification, however, this tariff would not be suitable to use as a basis for comparison with the Soviet railroad tariff. Nor would it be practical to analyze the thousands of commodity tariffs that represent the basic railroad freight rates in the US. For these reasons, some other basis must be used for comparing railroad freight rates in the US with rates in the USSR.

2. Basis for Comparison of Rates

Two bases exist for comparing Soviet and US railroad freight rates and charges. The first of these permits a comparison of the average unit revenue of freight service in the USSR with the average unit revenue of freight service in the US. This basis of comparison is obtained by dividing the total annual revenue derived from freight service, including that revenue resulting from the application of special charges as well as from transport rates, by the total number of revenue freight ton-kilometers produced annually. The second of these bases permits a comparison of the charge for the movement of a specific commodity for selected distances in the USSR with the charge for the movement of the same commodity and distances in the US. To obtain this latter comparison, information from the Soviet basic railroad tariff of 1 July 1955 can be measured against the rates and charges for the movement of specific commodities for specified distances recorded in the compilation by the ICC of a 1-percent sample of waybills for the year

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1955. The railroad freight waybill is an instrument that represents the contract between the shipper and the carrier, and it contains such information as the commodity shipped, the price paid for transportation, the distance, and the routing of the shipment. The ICC 1-percent sample contains representative sets of individual sample shipments for the five major class rate territories of the US (see Figure 2*). Unfortunately, the 1-percent sample is not quite comparable to the Soviet tariff, because the former contains the total price for the shipment and does not isolate the basic rate for moving the commodity, as does the latter. This sample, however, is the only practical US source from which a workable comparison may be derived.

B. Unit Revenues in Freight Traffic

Average unit revenues from freight traffic in the USSR have decreased steadily during the past 5 years. Between 1954 and 1958, there was a decrease of approximately 19 percent. In 1954, the last full year for recording revenues before the rate reduction of 1 July 1955, the average revenue per revenue ton-kilometer was 4.96 kopecks. In 1955 the average revenue was 4.63 kopecks and reflects, at least in part, the decrease in unit revenues during the last half of the year occasioned by the rate reduction. There was a further drop in the average unit revenue to 4.30 kopecks in 1956, the first full year to reflect the decrease in rates that became effective in mid-1955. Another decrease was evident in 1957, when the revenue stood at 4.15 kopecks. The declining trend in unit revenues is attributable, at least in part, to the annual increase in the average length of haul that was experienced during this period. This increase has had the effect of lowering the average price paid for rail transportation. A slight change in the composition of the traffic, with a relatively larger carriage of low-value bulk commodities, probably was responsible also for the decrease in unit revenue.

Unit revenues in the US were remarkably stable during these years, notwithstanding an over-all increase in rates of about 20 percent. 32/ There was a slight decrease in 1955 compared with 1954, and although unit revenue increased slightly in 1956, it still remained below the level of 1954. In 1957, however, the unit revenue was restored to the level of 1954 and reflected the rate increases of the year 1957. The decreases in 1955 and 1956 were occasioned by the fact that the concurrent rate increases were not sufficient to compensate for the diversion of some amounts of high-rate freight from the railroads to truck and freight forwarder transport. These

* Following p. 14.

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unit revenues in the USSR and the US are compared for the period under discussion in Table 2.*

C. Rates on Specific Commodities

1. Comparative Price Problem

The official rate of exchange of the ruble is 4 rubles to the US dollar. This rate of exchange, however, does not necessarily reflect the true dollar value of the ruble in terms of Soviet pricing, particularly with respect to consumer goods. Prices of consumer goods include a large amount of turnover tax in addition to "socially necessary expenditures" and give consideration to a number of other "cultural and political factors."** 33/ Railroad freight rates, however, do not include a turnover tax. The Soviet railroads collect no taxes from the shippers of freight and are not taxed specifically on freight traffic. Their rates are institutionally rather comparable to the internal wholesale prices of major commodities. If the wholesale prices bear some relationship, at a rate of 4 rubles to the dollar, to prices at which commodities are traded in world markets, then it may be reasonable to apply this rate of exchange in comparing US and Soviet railroad rates. This hypothesis is further supported by the ruble-dollar ratios contained in Table 2.* The unit revenues for 1958 were very close to 4 rubles to the dollar. (In 1957, unit revenues had shown only 5.5 percent fewer rubles to the dollar than in 1956, the first full year for which the rate reductions of 1 July 1955 in the USSR were applicable.) For the purposes of this research aid, therefore, rates on specific commodities for varying distances in the USSR have been compared with similar data for the US on the basis of 4 rubles to the dollar. It is recognized that this basis for comparison may be challenged on many counts. Such a basis, nevertheless, is regarded as sufficiently accurate to describe the comparison of rates in a reasonably proper magnitude.

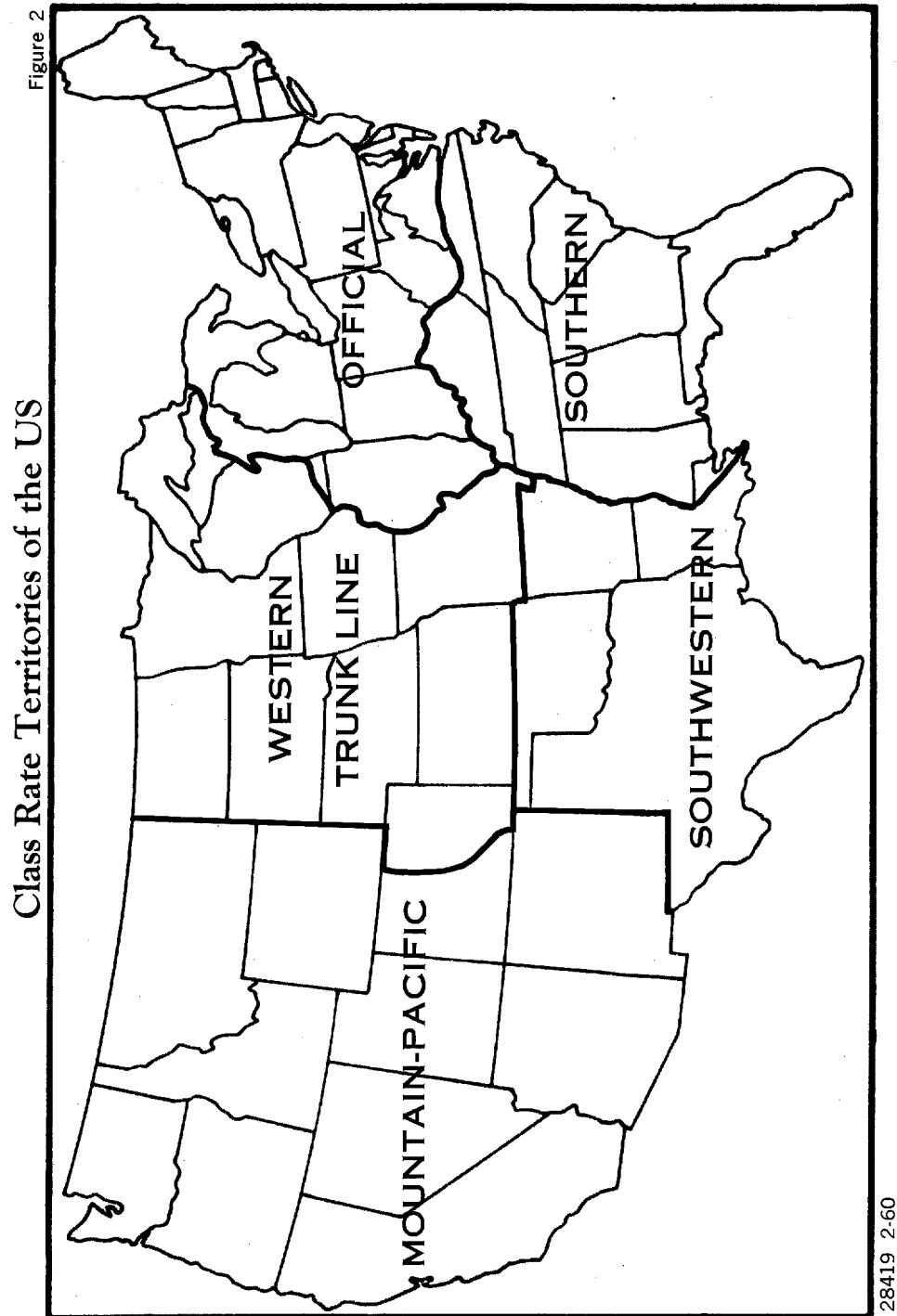
2. Important Similarities and Differences

The rates charged for freight movement in the USSR and the US can be compared by commodity in two ways, (a) on the basis of average length of haul, using both the Soviet distance and the US distance, and (b) on the basis of variable distances. Although the over-all average lengths of haul were not far apart in 1955, being 766 km for the USSR 34/ and 693 km for the US, 35/ there were considerable variations for individual commodities. It should be remembered in this

* Table 2 follows on p. 15.

** This phrase is presumed to mean pricing intended to encourage or discourage consumer spending and to bring income into the central state treasury.

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Table 2

Comparison of Unit Revenues in Railroad Freight Traffic
in the USSR and the US
1954-58

Year	USSR		US		Current Prices	
	Kopecks per Ton-Kilometer a/	Index (1954=100)	Cents per Ton-Kilometer b/	Index (1954=100)	Ruble-Dollar Ratio	Index (1954=100)
1954	4.960	100	1.00	100	4.96	100
1955	4.631	93	0.97	97	4.77	96
1956	4.298	87	0.98	98	4.39	89
1957	4.148	84	1.00	100	4.15	84
1958	3.998	81	1.00	100	4.00	81

a. 36/
b. 37/

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comparison, moreover, that the 1-percent sample for the US is derived from charges for actual movements and includes the effect of exceptions, commodity rates, and arbitraries,* whereas the computations made from the Soviet rate tables do not depart from the regular tariff schedules.

Rates on a selected list of major commodities have been analyzed to ascertain wherein the Soviet patterns differ from those of the US and in what manner. Soviet transport pricing involves placing higher comparative rates on manufactured articles, consumer goods, and other high-value freight than do US tariffs, because the competitive factor can be virtually ignored and the shipment treated as a matter of value of service -- that is, the consumer commodity will easily bear the higher rate. Consumer items that are to be burdened with a turnover tax at the point of eventual distribution are logical targets for high rates, and these rates offset the low rates charged for bulky basic industrial commodities in providing adequate income for the railroad system. 38/

A fact evident throughout this comparison (but because of its general uniformity one that is likely to escape comment) is the similarity in both design and level of many of the Soviet and US rate patterns. That this similarity should exist for tariff charges evolved from such different bases of planning and individually calculated in a dissimilar manner seems remarkable. When the relatively complicated US system of rates is considered as a whole, it seems clear that although the profit motive is a factor of primary importance, competition among railroads and between railroads and other types of transportation has been a major influence in bringing rates close to costs. In the US a good deal of attention has been paid to analyzing factors which bring about differences in cost. This type of study has usually taken place initially at the ground level, and responsive action has resulted in many of the present US rates. In controversial cases, rate theories have been advanced in decisions involving carriers against shippers, municipalities, ports, and other carriers by regulatory and judicial bodies ranging from the ICC to the US Supreme Court. The main points on which rate decisions generally rest are as follows: (a) cost of service, (b) competition among carriers for traffic, and (c) competition among both industrial and commercial interests for markets. 39/ There is no rule of mathematical certainty for deciding on the reasonableness of rates. Decisions are usually arrived at on the basis of comparability of rates, cost and ability-to-pay factors, and direct (out-of-pocket) costs as opposed to the theory of costs plus a proportionate share of overhead. 40/ The logical development of the economy has, however, been of strong significance in rate decisions by the ICC and the Supreme Court.

* US average lengths of haul were based on this 1-percent sample and are, therefore, approximations.

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There is, however, no assurance that the two rate systems will long remain at similar levels. Soviet railroads have two advantages: they are able to select specific items of traffic, particularly consumer goods, on which to assess relatively high freight charges, and in recent years they have not been confronted with rising labor and material costs requiring increased revenue in order to sustain profitable operations. US freight rates during 1950-55, on the other hand, were increased 30 percent above the level of 1949, and rate level increases of another 16 percent above the level in 1955 have been authorized by the ICC from then to the present. 41/

3. Commodity Groupings

a. Low-Value Bulk Commodities

The rates per ton-kilometer in the USSR and the US for low-value bulk commodities such as coal, gasoline, lumber, and iron ore are found to start for short hauls of 50 to 300 km at between 2 and 5 cents and to level off for the longer hauls at 1 cent for both countries (see Figure 3*). In all examples except that of gasoline, the Soviet rates per ton-kilometer for these commodities increase after reaching their lowest level. The USSR sets this level to conform with the distance that it regards from the point of view both of the railroads and of the national economy as constituting the most economical haul. For coal the maximum limit of this distance is approximately 2,500 km; for lumber, 2,000 km; and for iron ore, 750 km. For shipments beyond this limit the rate per ton-kilometer increases. For gasoline, no limit of normal haul is prescribed, and hence the rate remains level for the longest hauls.

For coal the Soviet and the US rates follow similar patterns up to 500 km, after which point the US rate drops off. The rates per ton-kilometer at the average lengths of haul (US, 468 km; USSR, 686 km) are almost identical, although in 1955 the Soviet average length of haul was more than 200 km greater than that of the US. With iron ore the US rate is uniformly lower than the Soviet rate, even at the lowest point of the latter. Because the US rate tends to flatten out at the middle distance of 750 km, whereas the Soviet rate increases, the spread between the two widens, but the US rate sample, with a longer haul (1,500 km and above), apparently does not represent much real traffic. On the other hand, an exception rate exists for a major long-haul movement of iron ore in the USSR.** The low US rate

* Following p. 18.

** Magnitogorsk to Stalinsk, about 2,300 km.

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probably can be explained by low terminal costs and intense competition from waterways for longer hauls.

The lumber rates probably are more nearly representative of actual traffic at longer distances in the US, where the average length of haul in 1955 was 2,113 km, than are the rates of the other three bulk commodities under discussion. On the longest lumber hauls the US rate tapers steadily downward, probably in response to inter-coastal steamship competition, whereas beyond 2,000 km the Soviet rate increases. At 3,000 km the two rates cross, and at 4,500 km (almost a maximum US haul) the US rate becomes about 30 percent less than the Soviet rate. The Soviet average length of haul in 1955 was 1,274 km.

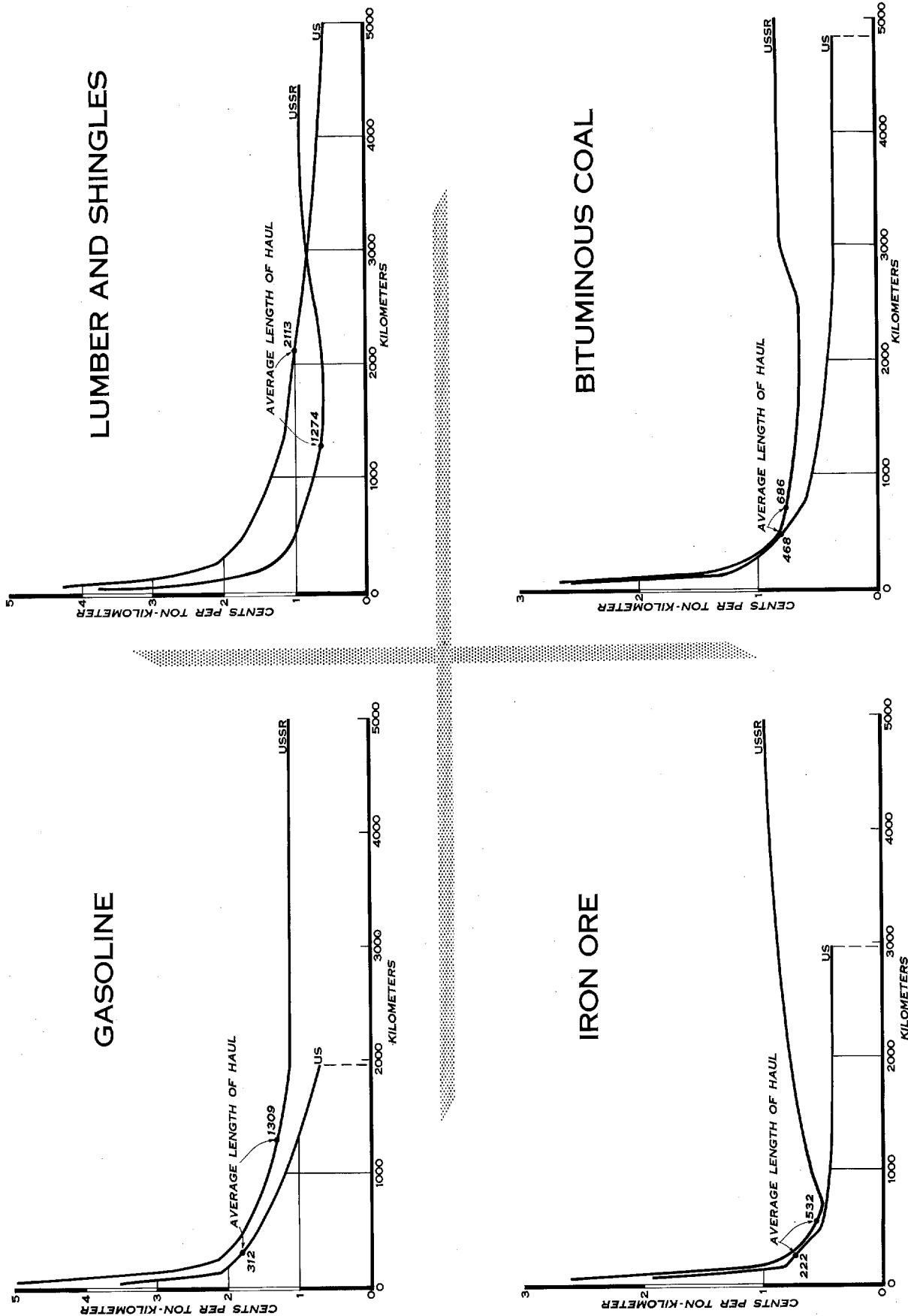
In the case of gasoline the Soviet rate is proportionally higher than the US rate all along the line. Gasoline is a commodity that apparently is treated for ratemaking purposes by the USSR as more nearly a semiprocessed consumer item than the other three commodities with which it is compared here, although the main consumers of gasoline are the armed forces, industry, agriculture, and intracity transport. A considerable amount of gasoline is shipped long distances to the Soviet Far East and Communist China, and this fact probably explains why there is no limit of normal haul and why the average length of haul in 1955 was as much as 1,309 km. In several instances, as stated above, special penalty rates are assessed for distributing gasoline outside of predetermined marketing areas. It is stated frankly that gasoline is one of the items on which the Soviet railroads propose to show a net profit, ^{42/} even though the present tariff rate is 15 percent lower than that previously in effect. In spite of the development of other types of transportation, gasoline is still moved in large quantities on the Soviet railroads. On the other hand, US railroads transport relatively little gasoline, as a result of competition from the many pipelines, inland waterway vessels, coastal tankers, and tank trucks serving so much of the country. The US rate curve that has been developed from the 1-percent sample appears at every point to represent a competitive effort to hold and if possible to gain traffic. The medium distance for gasoline (250 to 800 km) evidently is considered the range of greatest possible profit, this being the distance at which the tank car could best meet trucking costs and would be least likely to encounter pipeline or water competition. The average length of haul in 1955 was 312 km.

One phenomenon which characterizes all four commodities is that the rate for the US average length of haul ^{43/} is well above the US minimum rate level, whereas the rate for the Soviet average length of haul comes close to the Soviet minimum in each case. ^{44/} Although average lengths of haul were not precisely measured in either country, this type of difference would seem to be accounted for either

C-O-N-F-I-D-E-N-T-I-A-L

Figure 3

USSR and US: Comparative Rates on Railroad Freight for Low-Value Bulk Commodities, Group 1, 1955



C-O-N-F-I-D-E-N-T-I-A-L

by greater US sensitivity to cost factors in the handling of bulk commodities or by Soviet efforts to influence hauling distances or by both. An authoritative Soviet source on shipment costs, however, developed figures which show that intermediate-range (350 to 900 km) traffic in bulk commodities in 1955 under the new tariff initially would be handled mainly below cost. ^{45/} In this type of appraisal, each commodity evidently is expected to carry an appropriate share of all overhead costs, including fixed amounts for terminal and basic route services; maintenance of way, structures, and equipment; and allowances for depreciation and amortization. The fact that the rates on heavy bulk commodities have been set at slightly above or below these computed costs indicates an effort to hold down the capital and operating expense of heavy industry and thus to promote the industrial expansion of the country with as little inflationary pressure on wholesale prices as possible. The above source shows a gain on most short-distance and long-distance movement of heavy bulk commodities and also shows a declining trend of shipment costs on almost all such commodities from 1954 to 1955, which, if continued, would soon put even the intermediate-distance hauls in the black. An article in a 1957 periodical indicates that all bulk commodities in 1956 except coke and lumber more than paid their way on an average-distance basis. ^{46/} These calculations are believed to exclude all extras and penalties, actual or estimated, and to deal strictly with revenues derived from normal transportation.

Rates on another group of low-value bulk commodities, including gravel and sand, portland cement, phosphate rock, and chemicals not otherwise specified, are shown in Figure 4.* Short-distance average movements typify gravel and sand, and there are similarities between the Soviet and the US rate curves for these commodities. The Soviet rates start high on short-distance hauls, a feature that is stated to be designed to encourage short-haul movement by truck. ^{47/} The US rates continue downward for the medium hauls, reflecting lower costs and need for traffic, whereas the Soviet rates run into increases based on the outer limit of the normal haul. Actually, not much US traffic in these commodities is moved long distances. The influence raising the 1955 Soviet average length of haul for cement to 654 km** undoubtedly was the wide spacing of cement manufacturing plants in Siberia, an area in which many major construction projects were in progress.

For phosphate rock, the Soviet and US rate curves both have the same general characteristics, as do the curves for gravel and sand. Although no average length of haul for 1955 has been reported

* Following p. 20.

** 1954 figure.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

for the USSR, it probably was long because of the freezing of waterways in the winter.* Phosphate rock is a commodity that Soviet sources freely admit to carrying at a loss at both intermediate and long distances. In the US, in spite of the very low rate of 0.5 cent per ton-kilometer for hauls of 2,000 km and above, much rock was moved comparatively short distances from mines to port or to plant, thus holding the average length of haul down to 372 km. Waterways serving the US phosphate industry generally are navigable the year around.

US rates on general chemicals, which are a basic industrial ingredient, have been set for a longer average length of haul than the other commodities in this group (the average was 1,349 km in 1955), and Soviet rates appear to reflect a long-haul requirement also, although the average length of haul for 1955 has not been announced. For the greater distances, both rates level out at close to 1 cent per ton-kilometer. Soviet chemicals characteristically are moved long distances because the deposits are scattered, but association of end products makes it likely that centers of chemical industries will develop. Short-distance movement in these centers is often accomplished by pipeline and sometimes by belt transmission. On items unsuited to either pipeline or belt transmission, shipment by rail is frequently preferred to road trucking because of lower risk and greater capacity, and fairly high short-haul rates can be absorbed without unduly raising the cost of the finished product. There probably is less of a requirement for this type of movement in the USSR than in the US because of Soviet centralized advance planning of chemical centers to avoid it.

For all of these products, like those in the first group, it should be noted that the US rates applicable to average lengths of haul are well above the minimum rates charged for longer distances. In the two instances in which the Soviet average length of haul has been reported (for cement and for gravel and sand), the rate comes very close to falling at the low point of the scale. Here, then, are instances where the Soviet tariff has been set to restrict the length of haul, and it seems to be doing so.

b. Medium-Value Bulk Commodities

Four freight items selected from Soviet and US rate schedules as being representative of the general category of medium-value bulk commodities are wheat, potatoes, soybean oil, and newsprint paper. The respective rate patterns of these commodities are shown in Figure 5.**

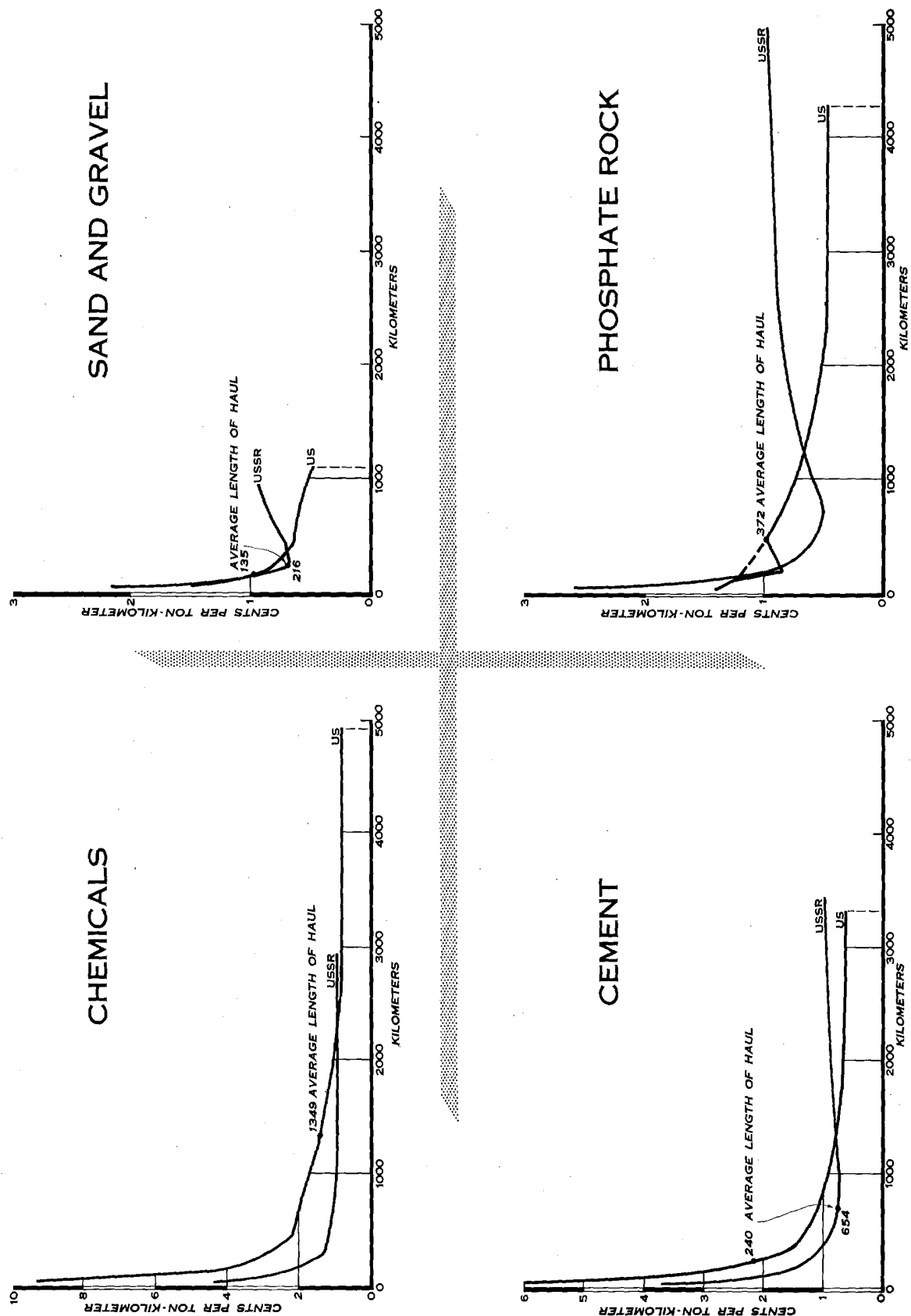
* The 1952 Soviet average length of haul for mineral fertilizers, including apatite, was 1,422 km. 48/

** Following p. 20.

C-O-N-F-I-D-E-N-T-I-A-L

Figure 4

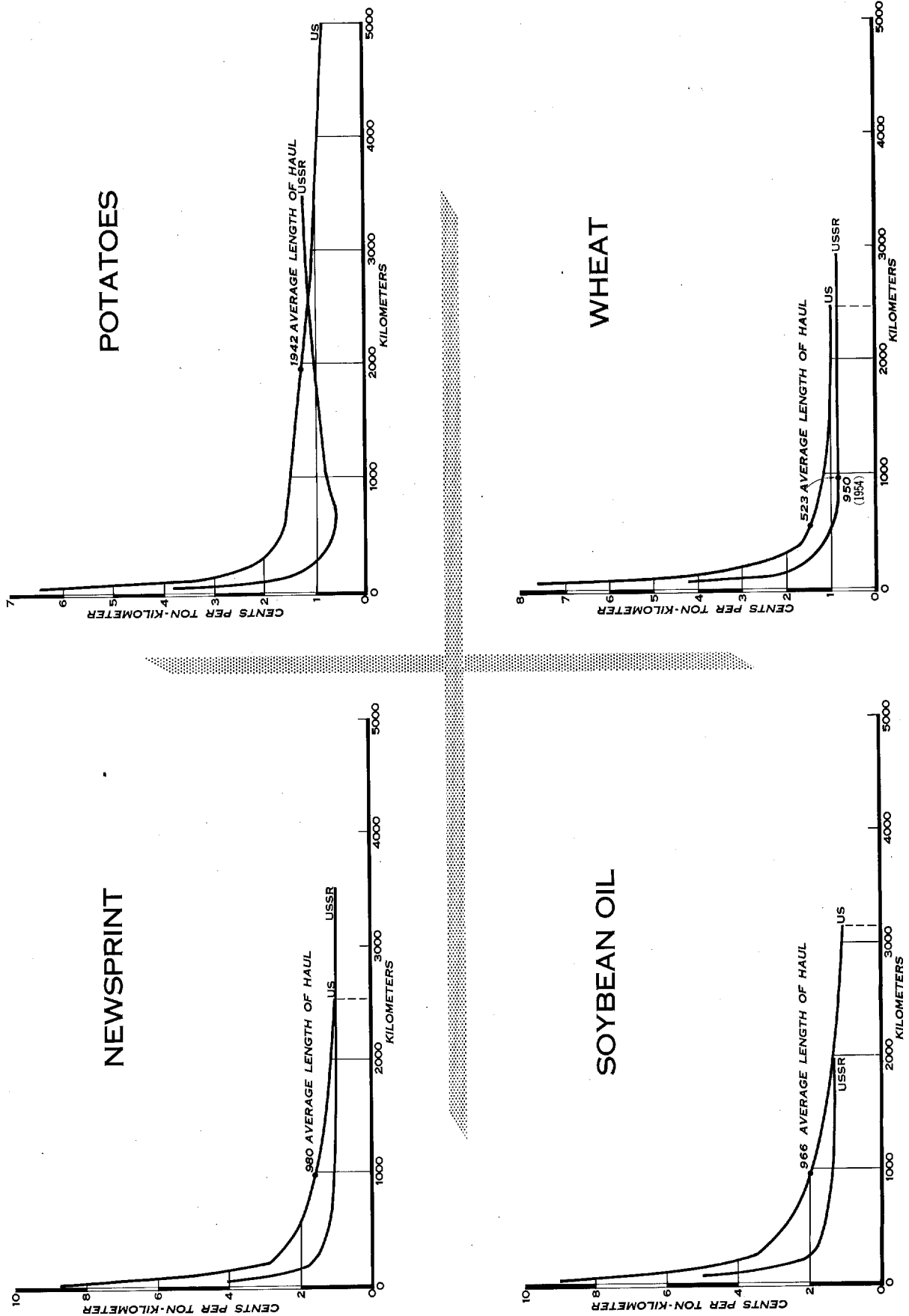
USSR and US: Comparative Rates on Railroad Freight for Low-Value Bulk Commodities, Group 2, 1955



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Figure 5

USSR and US: Comparative Rates on Railroad Freight for Medium-Value Bulk Commodities, 1955



C-O-N-F-I-D-E-N-T-I-A-L

The striking similarity of all four charts is immediately apparent. Not only are the patterns for both countries about the same in all cases, but the levels on the average also are nearly alike. Thus the relationship of the patterns for the two countries remains fairly constant. The US rates in each instance appear to be higher than the Soviet rates for the medium distances but taper down close to or below them on the longer hauls. According to a Soviet source, ^{49/} grain and oilseeds are transported at a figure very close to prorated costs under the present tariff at the middle distances, whereas at the shorter and longer distances a fair profit is shown.

The Soviet average length of haul in 1954 is available only for wheat, where at 950 km it is well along in the lowest rate level. There apparently is no outer limit of normal movement on wheat, a fact that may be explained by the long distance that wheat must be shipped in order to reach the Soviet Far East, a major deficit area. In the US the average length of haul for wheat (523 km) is at a point on the rate curve well above the long-haul minimum, reflecting an effort to cover costs and an ability to meet medium-distance competition.

On potatoes a rate increase beyond the limit of normal movement affects the Soviet rate at distances in excess of 700 km, whereas the US rate declines steadily and crosses the comparable Soviet rate at 3,000 km. Here it may be said that the US rate has been purposely set low to enable potato-growing regions located at long distances from consuming centers to compete with truck crop producers near the large cities. ^{50/} The effect of such a tariff is shown in the extended US average length of haul, which was 1,942 km in 1955. In the USSR, on the other hand, the intent apparently is to limit the marketing radius to 700 km, although, under the Soviet system of planning, a surplus in one area may be shipped to a deficit area, in this instance quite cheaply. Even at 1,942 km, the Soviet rate is about one-third lower than the US rate.

Another commodity that fits into this category and has a similar rate pattern and level for both the USSR and the US is manufactured iron and steel (see Figure 6*). Here the US rate is about double the Soviet rate at the middle distances, which are prevalent in the US (a 600-km average length of haul in 1955). The Soviet rate reaches its bottom level (0.7 cent per ton-kilometer) at approximately 1,000 km, just short of the average length of haul (1,055 km), and does not incur an increase for any longer distances. The US rate declines slowly, reaching the Soviet long-distance level at about 4,500 km.

* Following p. 22.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

c. Low-Value Manufactured and Processed Goods

Agricultural equipment, machinery, vehicle parts, and refined sugar are the commodities selected from the Soviet and US rate schedules for a comparison of rates in the field of low-value manufactured and processed goods (see Figure 7*). Disregarding sugar for the moment, the patterns and levels for the other three items are quite similar. The Soviet rates level off at 1,000 km at a rate of 1.5 cents per ton-kilometer and do not involve an increase for movements beyond the limit of normal haul. The US rates, which cease to taper off to any extent at about 2,000 km (1,250 km for vehicle parts), end on a long-distance level of between 2 cents and 2.25 cents per ton-kilometer. The US rate curves slope more gradually than the Soviet curves, allowing for more profitability at the middle distances. With these commodities, however, the US average lengths of haul in 1955 were between 1,000 and 1,400 km. No Soviet average lengths of haul are available.

Sugar shows an interesting contrast of patterns not present in the other charts. The Soviet rate tapers off sharply from its short-distance level of about 4 cents per ton-kilometer to close to its minimum of 1.8 cents at 500 km. No increase is indicated for longer distances, but the long-distance level of 1.8 cents in itself appears to be high for a low-value processed commodity that can be loaded so compactly as sugar. Sugar, being primarily a consumer item, seems to have offered an opportunity for the use of a comparatively high long-distance rate to contribute to the over-all net earnings of the railroads. Actually, application of this rate would scarcely be felt by consumers in a retail price of between \$2.00 and \$4.00 per kilogram, which includes a stiff turnover tax. ^{51/} The US freight rate on sugar is difficult to plot in the 100-km-to-400-km zone because the samples are not consistent. The rate probably exceeds that of the USSR in this distance span, but at 500 km it is below 1.8 cents, and at its average length of haul (819 km) it tapers down to about 1.5 cents. The samples from there on out are consistent, and at 3,450 km a rate of 0.65 cent is recorded. Thus US railroads are making a strong effort to hold the movement of sugar in the face of competition from water and truck transport.

d. High-Value Manufactured and Processed Goods

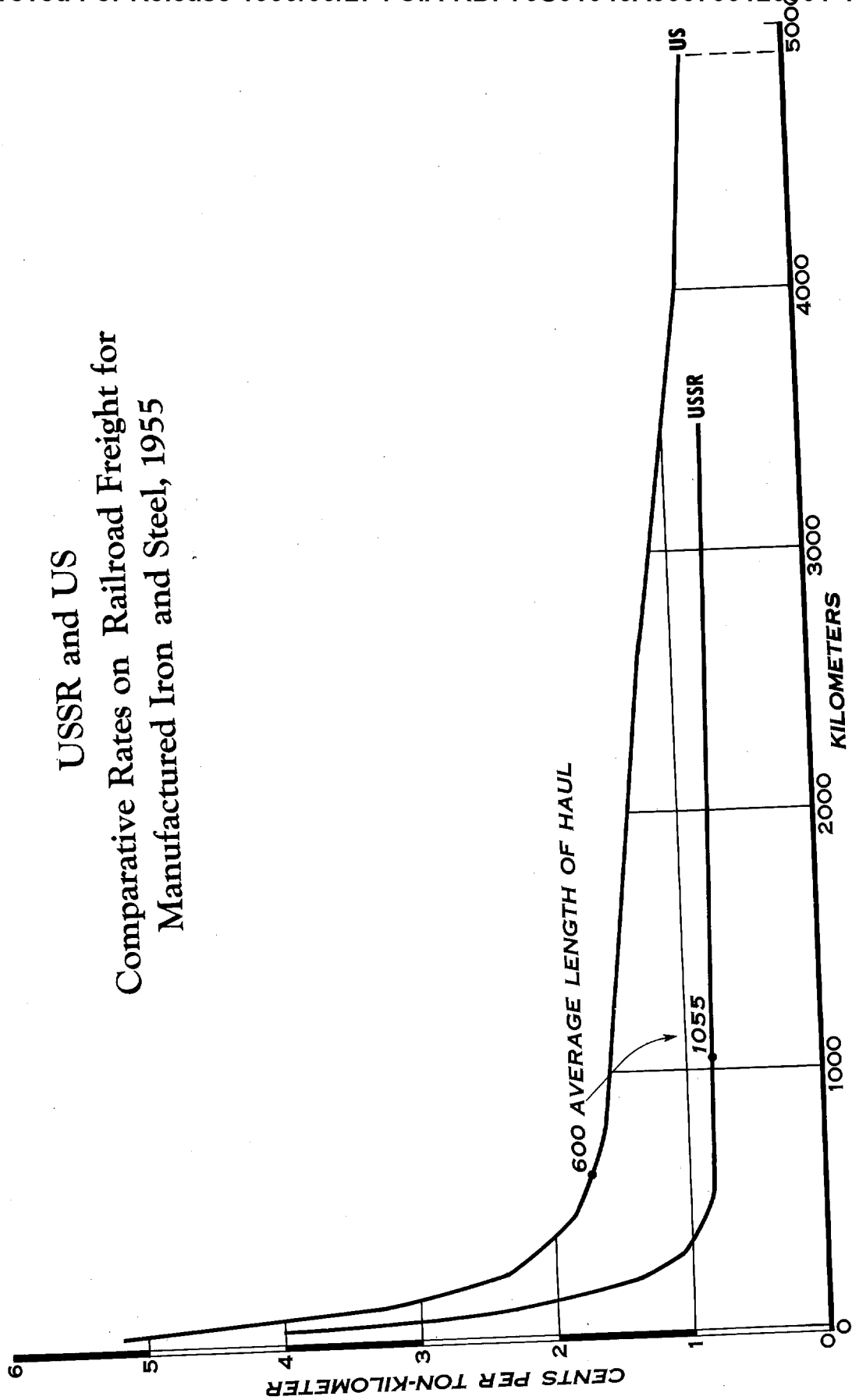
Items selected from the Soviet and US railroad tariff lists to illustrate rate patterns on high-value manufactured and processed goods are fresh meat, cotton cloth, crude rubber, and assembled

* Following p. 22.

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Figure 6

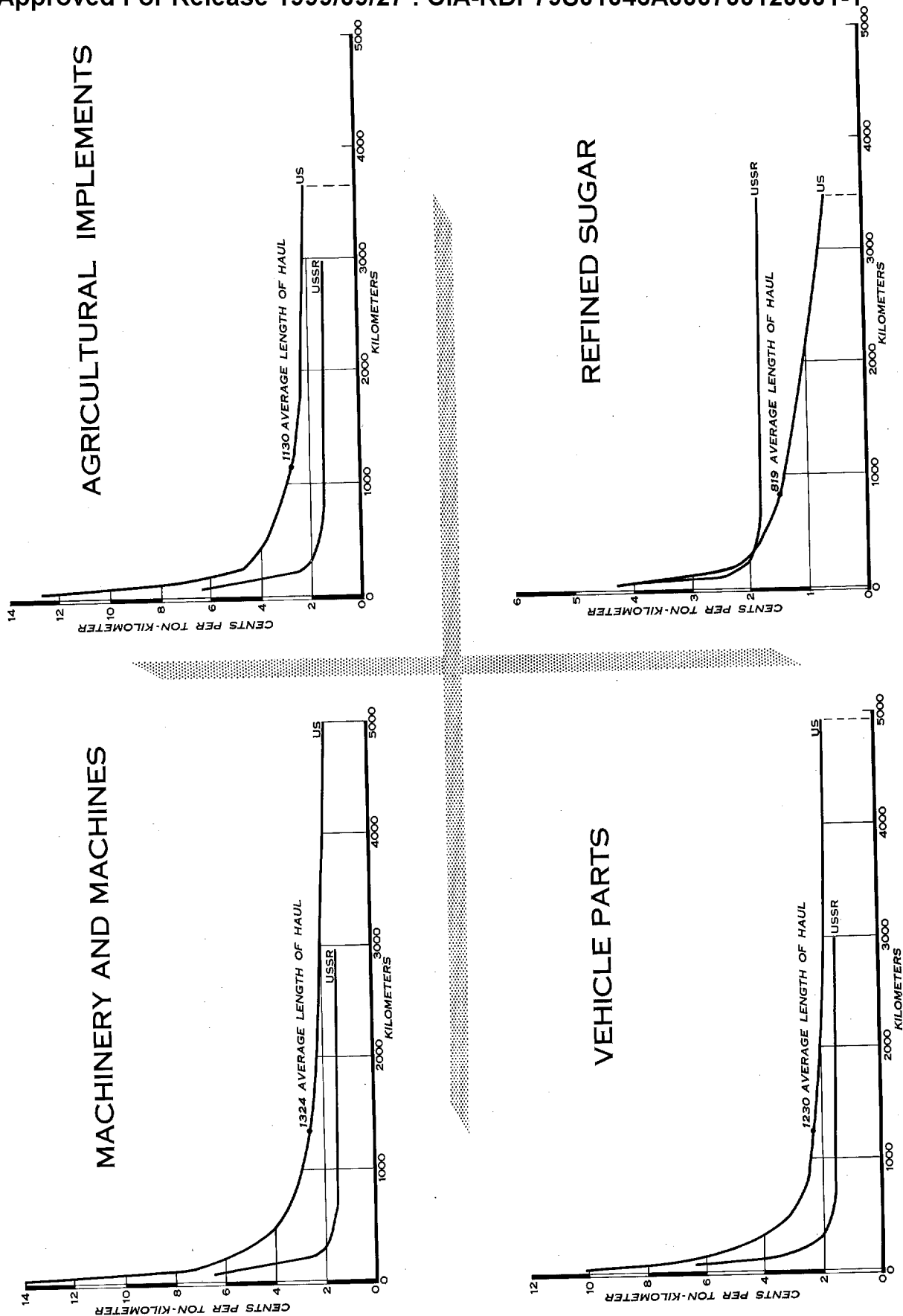
USSR and US Comparative Rates on Railroad Freight for Manufactured Iron and Steel, 1955



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Figure 7

USSR and US: Comparative Rates on Railroad Freight for Low-Value Manufactured Goods, 1955



C-O-N-F-I-D-E-N-T-I-A-L

motor trucks. Figure 8* shows the comparative rate schemes of each of these items of merchandise.

On two of the items, it will be noted, the Soviet rate curves behave in much the same manner as in the case of sugar -- that is, the curves level off at comparatively short distances and at high prices. Both cotton cloth and crude rubber level off near 3.8 cents per ton-kilometer at well under 1,000 km. This type of rate curve suggests almost a straight ton-kilometer charge, with increases added only to cover terminal charges at the shorter distances. It would not be unreasonable to expect that cotton cloth, an item close to the consumer, would receive a high rate, but there is good reason to question why rubber, mainly used for tires and insulation, would be treated in this manner. Both items require clean, water-tight cars. Rubber is believed to have moved long distances in the USSR in the recent past, and at this freight rate it should considerably more than pay its way. In the US the rate curves for cotton cloth and rubber are similar, being at higher levels than the Soviet rates in the 50-km-to-200-km zone and then curving below them to a slow taper that ends at less than 1.5 cents per ton-kilometer at long distances. The effect of competing types of transportation is reflected here. Average lengths of haul in 1955 (1,395 km for cloth and 1,238 km for rubber) were well down toward the bottom level of the rate curve.

On fresh meat the Soviet rate, somewhat surprisingly, shows up to be relatively lower than the US rate all along the line. Here again, a rigidly level rate for all distances above 250 km is evident in the Soviet pattern. Extra charges, however, such as those for cleaning and icing of cars and for weighing, checking, and inspecting cargoes -- services that are normally included in the US rate -- are assessed in the USSR. These charges would amount to an average of about 0.5 cent per ton-kilometer, with many variations owing to distance, season, and type of car, which would bring the two rate levels close together again. 52/

On assembled motor trucks the US rate appears to be relatively higher than the Soviet rate at all distances. For trucks being shipped out of manufacturing, rebuilding, or repair establishments, however, an arbitrary of 50 percent would have to be added to the Soviet rates for all distances of less than 300 km. 53/ This penalty would bring the Soviet rate up to a level more nearly equal to that of the US rate at the shorter distances. The objective appears to be to force vehicle driveaways to points of delivery near the plants. There are at present so many driveaways in the US, and vehicle assembly

* Following p. 24.

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plants are so well dispersed, that the importance of this type of traffic to US railroads is small. The lower US rate for parts, moreover, encourages the delivery of parts and subassemblies to assembly plants scattered throughout the country. With its numerous rebuilding and repair establishments, the USSR has developed a modified version of the same procedure, but the long-haul movement in the USSR is of greater significance in proportion to production than is the case in the US, and the Soviet attempt to salvage used parts is probably more efficient.

Other consumer goods on which high rates are charged (and on which high turnover taxes are assessed) are clothes, shoes, bakery products, and tobacco.

IV. Comparison of Soviet Railroad Freight Rates with Rates Applicable to Other Types of Inland Transport

A. General Considerations

The Soviet policy to date of giving priority to rail transport over other types of transportation is reflected in the far greater relative weight of railroad traffic in the composition of all traffic moved in the USSR compared with similar traffic in the US. In the US the official policy has been to foster the development of all types of modern transportation into a system that will serve adequately the transportation needs of the country. Table 3* indicates how the movement of freight tonnage was distributed within the two countries in 1955, a year that may be regarded as representative of the decade 1950-60.

The Soviet railroad tariff, which applies to such a large portion of the traffic moved, provides a natural base on which rate systems for the less developed types of transportation can be built, dependent on attendant costs, capabilities, and programs. In instances where it is desired to divert traffic from the railroads to other types of transportation and where the railroad tariff is such as to compete with the costs of the alternate type of movement, differentials and penalties are introduced to bring about the desired result.** The tariffs thus are used as an instrument for preserving the noncompetitive, maximum-usage aspect of Soviet transportation.

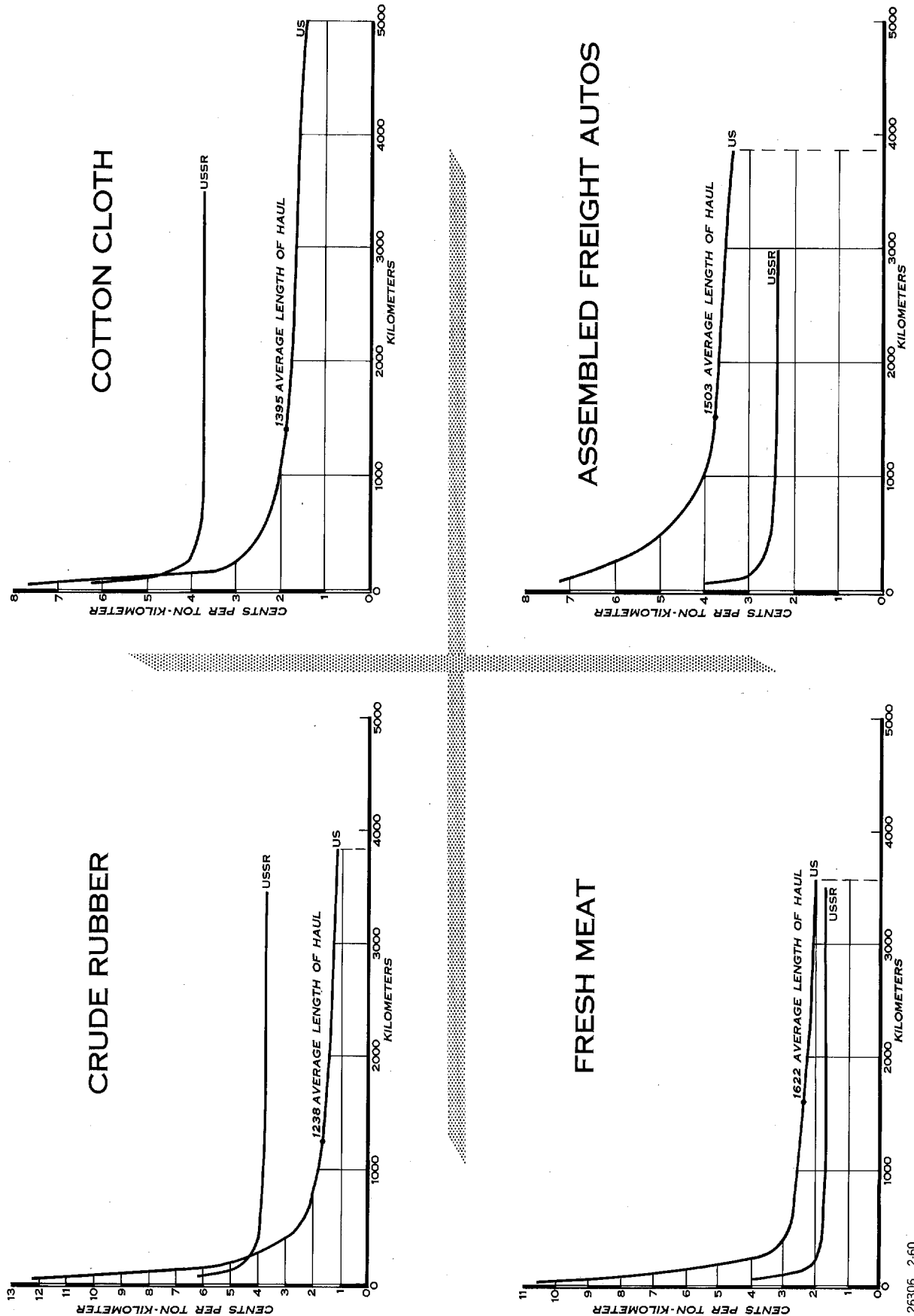
* Table 3 follows on p. 25.

** In spite of the seemingly cheap transportation offered by the numerous Soviet inland waterways, there appears to be a lack of enthusiasm among "customers" for this type of transportation. That inland waterways can operate only for limited seasons in many parts of the USSR is a partial drawback. Nevertheless, much space in Soviet publications is devoted to propagandizing the potentials, advantages, and economies of Soviet inland water transport.

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Figure 8

USSR and US: Comparative Rates on Railroad Freight for High-Value Manufactured Goods, 1955



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Table 3

Comparison of Ton-Kilometer Performance in Inland Freight Traffic
in the USSR and the US, by Type of Carrier a/
1955

Type of Carrier	USSR		US	
	Billion Ton-Kilometers <u>b/</u>	Percent	Billion Ton-Kilometers	Percent
Railroads	970.9	88.6	955.7 <u>c/</u>	47.6
Inland waterways	67.4	6.2	316.1 <u>d/</u>	15.7
Motor vehicles	42.5	3.9	438.6 <u>e/</u>	21.9
Petroleum pipe- lines	14.7	1.3	296.6 <u>d/</u>	14.8
Total	<u>1,095.5</u>	<u>100.0</u>	<u>2,007.0</u>	<u>100.0</u>

a. Not including coastwise or intercoastal maritime cargo movement for either country.

b. 54/

c. 55/. Figures have been converted to metric ton-kilometers.

d. 56/. Figures have been converted to metric ton-kilometers.

e. This figure was computed as follows: US truck-miles on rural roads in 1955 amounted to 70,486 million and on city streets to 40,901 million, 57/ a total of 111,387 million. Short-ton-miles of freight moved on rural roads only in 1955 came to 190.1 billion. 58/ No figure is available for short-ton-miles of freight moved on city streets. The weighted average load for rural truck movements derived from the corresponding mileages is 2.697 short-ton-miles. By applying this average to the total truck mileage, a figure of 300.4 billion short-ton-miles is obtained, which equates to 438.6 billion metric ton-kilometers. It is recognized that the true average intracity load may be at variance with the average load on rural roads, but the error is minimized by the greater amount of distance traveled on rural roads.

In the US the various tariff systems have been built up from different bases but always give consideration to the mover with the lowest costs, depending on the route, the commodity, and operational factors. It is assumed that no carrier, in an effort to meet competition, will quote rates as low as out-of-pocket costs, but certain carriers, particularly those with heavy overhead expenses or empty movements, may offer rates that do not include a proportionate

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share of maintenance, depreciation, and general expenses. Because of this type of competition, freight movement tends to shift from one method of transportation to another, and managements are obliged to watch costs very closely, making use of every opportunity to effect economies and increase efficiency. At the present time, because the total supply of transport equipment and facilities is more than adequate to cope with demand, US routes and facilities with higher costs are experiencing a series of shutdowns and abandonments of a type not yet encountered in the USSR.

Pipelines are worthy of special mention in this connection. In the US these facilities have developed rapidly because of comparatively low operating costs. There was added stimulation to their growth during the early part of World War II when coastal tanker shipments were interrupted. Following the war, with the resumption of cheaper tanker service, some of the largest pipelines were in due course converted from movement of petroleum to conveyance of natural gas.

In the USSR, petroleum formerly moved in large amounts in a northward direction up the rivers that flow into the Caspian and Black Seas, but in recent years the bulk of the internal petroleum movement has been on the railroads. The development of the Ural-Volga oilfields and the industrial expansion of Siberia have brought about a requirement for east-west petroleum movement that the waterways cannot provide. This demand has been instrumental in bringing about the intensive pipeline construction program underway at present.

B. Inland Water Transport

L. Soviet Inland Water Rates

The present inland water freight tariff in the USSR is specified in an official tariff handbook 59/ and became effective on 1 January 1957. (For a sample page of the inland water freight tariff, see Figure 9.*) This tariff represents the first complete revision of the inland water transport rate structure in the USSR since 1940. Between these dates the rate levels had changed, but the basic structure remained substantially the same. A comparison of the 1957 manual with a previous handbook (1952, with revisions) appeared in the Soviet press, but the earlier handbook is not available. Part of its contents were given in a rate summary issued for the use of Soviet construction projects in 1956, 60/ thus making possible a reasonably accurate description of the relation between the 1952 and 1957 tariffs.

* Following p. 26.

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USSR: Sample Page of Inland Water Tariff of 1957

Схемы 69—76

км 1301—1700

№ схемы	Скорость и партионность перевозки	В руб. и коп. за 1 т						№ схемы
		1301—1350	1351—1400	1401—1450	1451—1500	1501—1600	1601—1700	
69	Грузовая	26—10	26—60	27—10	27—60	28—80	30—60	69
69	Большая	31—60	32—20	32—80	33—40	34—80	37—00	69
69	Отправки до 1 т	37—90	38—60	39—30	40—00	41—70	44—40	69
69	Отправки свыше 1 до 5 т	34—70	35—40	36—00	36—70	38—30	40—70	69
70	Грузовая	17—40	17—70	18—10	18—40	19—20	20—40	70
70	Большая	21—10	21—50	21—90	22—30	23—20	24—70	70
70	Отправки до 1 т	25—30	25—70	26—20	26—70	27—80	29—70	70
70	Отправки свыше 1 до 5 т	23—20	23—60	24—00	24—50	25—50	27—20	70
70,а	Грузовая	8—60	8—80	8—90	9—10	9—50	10—10	70,а
70,а	Большая	10—40	10—60	10—80	11—00	11—50	12—20	70,а
70,а	Отправки до 1 т	12—50	12—70	13—00	13—20	13—80	14—70	70,а
70,а	Отправки свыше 1 до 5 т	11—50	11—70	11—90	12—10	12—60	13—40	70,а
71	Грузовая	23—60	24—40	25—10	25—80	27—00	28—50	71
71	Большая	28—50	29—40	30—40	31—30	32—70	34—50	71
71	Отправки до 1 т	34—20	35—30	36—40	37—50	39—20	41—40	71
71	Отправки свыше 1 до 5 т	31—40	32—40	33—40	34—40	35—90	37—90	71
72	Грузовая	15—70	16—20	16—70	17—20	18—00	19—00	72
72	Большая	19—00	19—60	20—20	20—90	21—80	23—00	72
72	Отправки до 1 т	22—80	23—60	24—30	25—00	26—10	27—60	72
72	Отправки свыше 1 до 5 т	20—90	21—60	22—30	22—90	23—90	25—30	72
73	Грузовая	36—00	37—40	38—80	40—10	42—20	44—90	73
73	Большая	43—60	45—30	46—90	48—60	51—00	54—30	73
73	Отправки до 1 т	52—30	54—30	56—30	58—30	61—20	65—20	73
73	Отправки свыше 1 до 5 т	48—00	49—80	51—60	53—40	56—10	59—70	73
74	Грузовая	29—90	31—00	32—20	33—30	35—00	37—30	74
74	Большая	36—20	37—60	38—90	40—30	42—30	45—10	74
74	Отправки до 1 т	43—40	45—10	46—70	48—30	50—80	54—10	74
74	Отправки свыше 1 до 5 т	39—80	41—30	42—80	44—30	46—60	49—60	74
75	Грузовая	29—50	30—60	31—70	32—80	34—40	36—60	75
75	Большая	35—70	37—00	38—30	39—60	41—60	44—20	75
75	Отправки до 1 т	42—80	44—40	46—00	47—60	49—90	53—10	75
75	Отправки свыше 1 до 5 т	39—30	40—70	42—20	43—60	45—80	48—70	75
76	Грузовая	21—70	22—50	23—30	24—10	25—30	26—90	76
76	Большая	26—30	27—20	28—20	29—20	30—60	32—60	76
76	Отправки до 1 т	31—50	32—70	33—90	35—00	36—80	39—10	76
76	Отправки свыше 1 до 5 т	28—90	30—00	31—00	32—10	33—70	35—80	76

This is a typical page from the dry-cargo section of the Soviet internal waterways tariff of 1 January 1957. The extreme left-hand and right-hand columns contain the numbers of the schemes or class-rate patterns in numerical order, with each class-rate pattern repeated four times for the variants shown in the second column from the left. These variants consist of slow or freight shipments, express shipments, small shipments up through 1 ton, and shipments of more than 1 ton through 5 tons. Charges, expressed in rubles and kopecks per ton of goods moved, are presented in a series of columns, each representing a zonal length of haul. The zones vary from 50 km and less up to 4,901–5,000 km. To obtain the average unit rate per ton-kilometer, it is necessary to divide the charges by the length of haul (when known) or, for theoretical purposes, by the midpoint of the zone. In other portions of the tariff, individual commodities and commodity groups are indexed to the appropriate rate pattern, including basic, exceptional, and penalty rates.

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In the handbook of river transport rates effective from 1 January 1952 through 31 December 1956, there were 26 basic rate classes or "patterns." Class No. 26 carried the lowest rates and Class No. 1 the highest. There was a 20-percent difference between successive rate patterns -- that is, No. 25 was 20 percent higher than No. 26, No. 24 was 20 percent higher than No. 25, and so on. These rate classes were used for all cargoes transported in vessels of the Ministry of the River Fleet of the USSR.

The rate classes consisted of specific charges per ton for each of a number of distance zones. Zones for lengths of haul up to 100 km were of 10 km each. For hauls of more than 100 km the zones gradually were increased in size up to 100 km for all hauls of more than 1,000 km.

In the 1952 handbook, all of the separate inland waterways navigated by the former Ministry of the River Fleet were grouped into five different "classifications." This grouping meant that for each commodity there were in most cases five pertinent rate classes, one for each of the five waterway groups. In addition, for many commodities, additional rate classes were used to provide exception rates. Further variations were added providing arbitrary increases where necessary to meet extra costs.*

In addition to the 26 rate classes for cargo carried in vessels, there were a number of rate classes for towing log rafts on various waterways. Timber is a very important component of Soviet river commerce. Rafted logs constituted more than 40 percent of the total tonnage hauled by the former Ministry of the River Fleet. 61/

The new structure of inland water transport rates, which became effective on 1 January 1957, was designed chiefly to remedy a number of conditions that were regarded as unacceptable, including the following:

* For example, in the case of coal shipments, rate class No. 20 applied to waterways in Classification I; rate class No. 17, to waterways in Classification II; rate class No. 15, to waterways in Classification III; rate class No. 14, to waterways in Classification IV; and rate class No. 13, to waterways in Classification V, except for certain specified waterways to which other rate classes applied. In the case of coal the exceptions provided four additional rate classes, Nos. 16, 18, 19, and 22. In addition, three of the five waterway "classifications" specified that on certain enumerated difficult waterways or stretches in the classification the applicable rate class was to be increased by a given percent (50, 100, 200, or 300 percent). This rule, in effect, added several more rate classes.

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a. River tariffs for dry cargoes in some regions on routes also served by railroads were higher than prevailing railroad rates (before open-season penalties).

b. Tariffs were higher on the tributaries of some rivers than on the main rivers. There were also inequities in tariffs on the rivers themselves.

c. Small-lot cargoes were not penalized by higher rates as they were in the railroad tariff structure.

d. There was no consistency in the ratios between costs and rates. Some rates were as little as 26 percent of costs, while others (in the cases of rafted timber and POL) ran as high as 150 and 270 percent. Rates were almost equal to costs on voyages of medium length along some routes, whereas they were considerably lower than costs on both long and short voyages.

The new 1957 tariff consists of 50 classes of dry cargo rates called "patterns" or "schemes," 68 classes of exceptional rates, 15 classes of liquid cargo rates, and 12 classes of rates for the towing of timber in rafts, along with rules for the application of extra charges, penalties, and exceptions. These classes replace the 26 rate classes used in the 1952 handbook. The patterns are numbered from the lowest rate to the highest. (This order conforms to the order in the highway tariff and is the opposite of the order in the earlier waterway handbook, in which the cheapest rate class had the highest number.) Each class of dry cargo rates provides specific charges per ton, four entries for each length of haul zone. These four entries are for different sizes and speeds of shipment -- one a bulk rate for slow or "freight" speed; one for full speed; one for shipments of 1 to 5 tons, speed not specified; and one for shipments of less than 1 ton, speed not specified. Bulk rates per ton-kilometer at full speed are about 20 percent higher than bulk rates at freight speed, whereas the rates for shipments of 1 to 5 tons are about 10 percent higher still, and the rates for shipments of less than 1 ton are 10 percent more. The differential by which each rate class exceeds the previous one varies somewhat but averages about 10 percent instead of the differential of 20 percent in the 1952 handbook. The appropriate rate pattern is assigned to each commodity and steamship line by means of an index of 76 groupings, within each of which are several subgroupings.

In addition to the rates mentioned above, there are 12 special tariffs in the 1957 handbook for towed floating cargoes of rafted timber. These tariffs are given for movement of cubic meters instead of metric tons, and the schemes are designed for different

C-O-N-F-I-D-E-N-T-I-A-L

sizes of rafts, the lowest tariff being applicable to rafts of 10,000 cubic meters or more, with steps up to a much higher rate for rafts of 2,500 cubic meters or less. Upstream towing of timber rafts is covered in the two schemes calling for the highest rates, the greater of the two being particularly severe.

The 68 classes of exception rates for inland water transport in the USSR are grouped under two important categories that apply to shipments between ports also connected by railroad. One category is for through water traffic, and the other category is for the water part of the haul in combined through rail and water traffic. The rates are computed at a given percent below the railroad rate per ton for the shortest distance between the ports, rail or water* -- that is, 10 to 20 percent below the railroad rate in the case of strictly water traffic and 20 to 50 percent below the railroad rate for combined through rail and water traffic. (The railroad rate used as a base is the winter or closed-season rate -- that is, the rate without the addition of the penalty for rail shipment parallel to waterways during the navigation season.) By way of comparison, under the earlier inland water tariff structure there was an exception rate for combined rail and water traffic that applied to the water part of the trip and was valid in most of the important waterways of the European USSR, but this rate was only two classes cheaper than the usual water rate and could conceivably have exceeded the railroad rate if the waterway followed an indirect or serpentine course.

The 15 liquid cargo classes give 2 rates only for each distance zone, both for bulk movement, one being for freight speed and the other for full speed. The full-speed rate is uniformly 20 percent higher than the freight-speed rate (allowance being made for rounding out each amount to tens of kopecks, as is done throughout the tariff).

Zones are given up to a distance of 5,000 km. The lowest zone is zero to 50 km, from which point the zones up to 100 km are 10 km each. From 100 to 300 km the zones are 20 km each; from 300 to 600 km, 30 km; from 600 to 1,000 km, 40 km; and from 1,000 to 1,500 km, 50 km. From 1,500 to 5,000 km, 100-km zones are used. Instead of classifying the inland waterways in groups as in the earlier rate regulations, however, the new regulations classify the steamship lines in eight groups. (This grouping has much the same effect, but tariff calculations are simplified.) Rates per ton-kilometer are not quoted in the tariff, and hence rate curves must be based on computations. Such rate curves have been worked out for a few commodities in two groupings, bulk commodities and consumer goods. These rates are shown in Figures 10** and 11.**

* See 2, p. 30, below.

** Following p. 30.

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2. Comparison with Rates in the US

In the US, inland water transport rates are formulated by the individual carriers and carrier associations. Although some carriers are required to file their rates with the ICC, most of the cargo moved on inland waterways in the US is hauled by carriers that are exempt from the rate-filing requirement. The exempt carriers include contract carriers of bulk cargo in the Great Lakes trade as well as both contract and common carriers on inland waterways other than the Great Lakes, provided that no more than three commodities are hauled. In addition, there are the private carriers (concerns hauling their own raw materials or products) that are totally unregulated. Intrastate water carriers also are exempt. 62/

Even the regulated carriers in the US have wide latitude in establishing freight rates. The authority of the ICC extends only to setting minimum and maximum rates for the common carriers under its jurisdiction and minimum rates for the contract carriers. 63/ Furthermore, the rate-setting authority of the ICC is infrequently exercised. A rate proposed by an individual carrier or carrier association is usually on file for a short period, after which it becomes effective if no one protests it.

As a result of this absence of regulation, US inland water freight rates vary and fluctuate depending on costs and competition, especially as applied to contract carriers. In addition, a considerable tonnage of water-borne cargo is moved by private carriers and does not involve any computation of rates at all. Consequently, it is impossible to obtain average rates per short-ton-mile for individual commodities moving on inland waterways of the US. Nor is there any sampling of river freight similar to the ICC 1-percent sample of railroad waybills used in the railroad section of this research aid from which average revenues per short-ton-mile can be obtained. Instead of average rates or revenues, therefore, it has been necessary to use samples of rates charged by individual companies and, where a large share of the traffic is moved by private carriers, to consider costs. These data are scattered in records of individual companies in different cities of the US. Some rates are filed with the ICC, but, for the most important bulk freights, many are not. No rates are filed for bulk shipments of iron ore on the Great Lakes or for petroleum and its products on the Mississippi River, for example, even though, based on 1955 statistics, 99 percent of the tonnage of iron ore in US domestic inland water traffic moves on the Great Lakes and 32 percent of all gasoline traffic moves on the Mississippi River, from Minneapolis to its mouth. 64/

C-O-N-F-I-D-E-N-T-I-A-L

Figure 10

USSR Volga* Rates on Inland Water Transport of Heavy Bulk Commodities, 1957

GINNED COTTON
COAL
LARGE TIMBER RAFTS

UPSTREAM TIMBER RAFTS
GRAIN
ORE

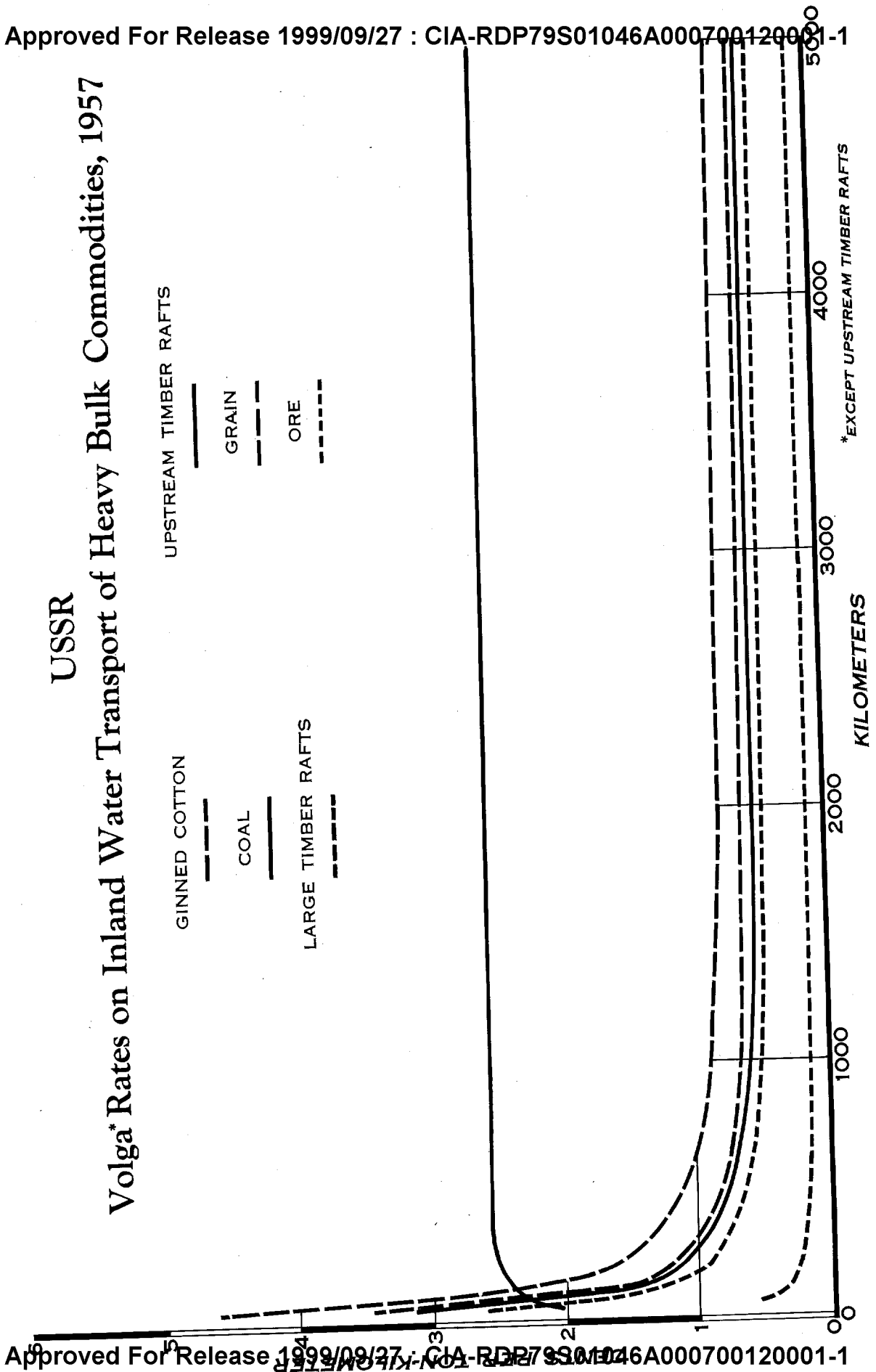
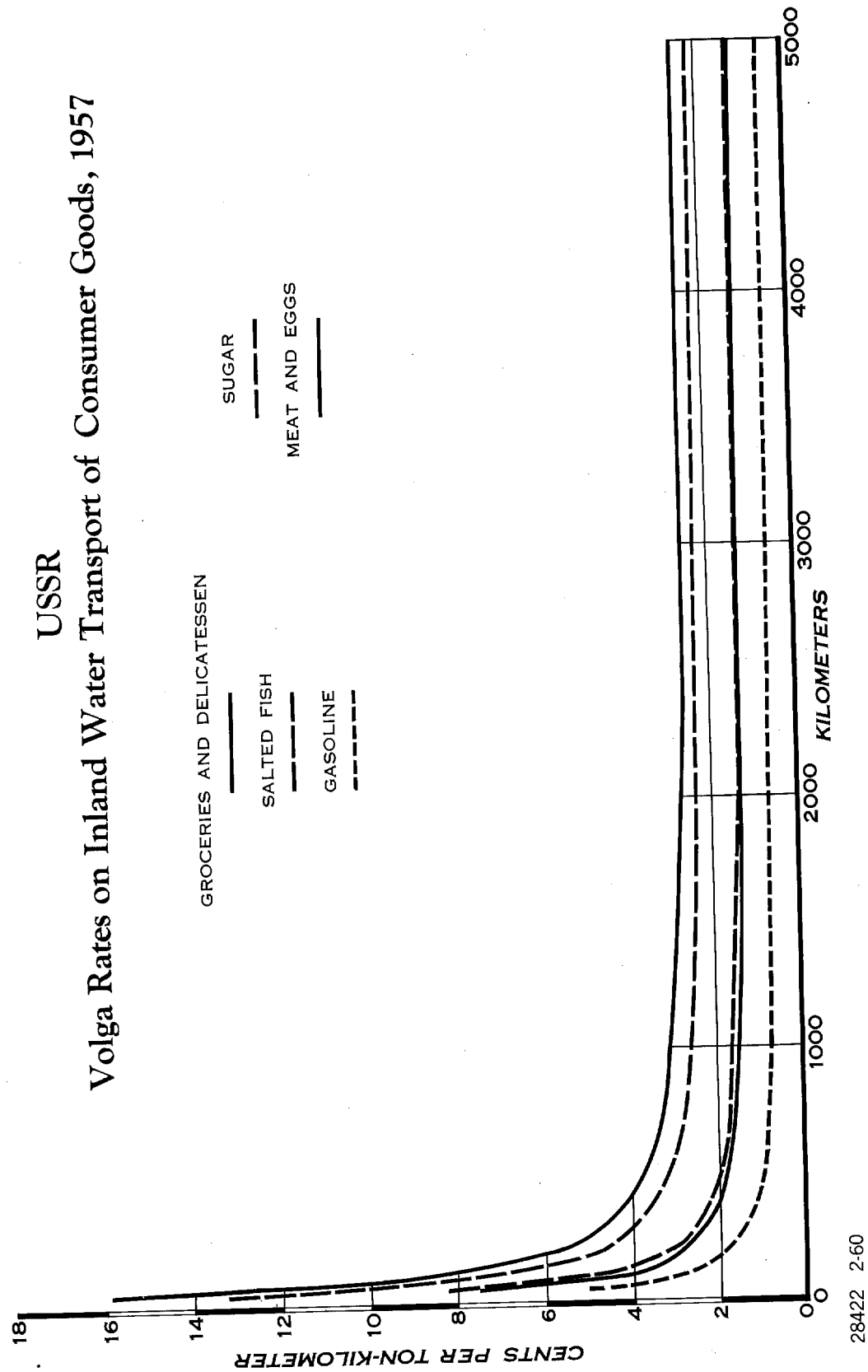


Figure 11



C-O-N-F-I-D-E-N-T-I-A-L

In the US, tonnage rates are quoted from one specific port to another rather than for distance zones as in the USSR. Rates for two different hauls of approximately the same length are often different because costs depend not only on distance but also on existing port facilities, lay days, navigation hazards, and so on. In addition, rates are affected by varying competitive conditions. Therefore, conversion of actual charges between specific ports to rates per short-ton-mile for corresponding water distances may produce variations.

Inland water transport in both the USSR and the US is organized to meet requirements that differ in many respects because of dissimilarities in geography, weather, and natural resources in addition to philosophy of national economic planning. The rate structures, as in the case of railroad tariffs, have been constructed from different angles of approach. That of the USSR has been superimposed by authority of the central government as the result of centralized research and planning, and that of the US has developed over a period of years on the basis of demand for service, competition, costs, and experience. The two marketing systems, the former institutionalized and designed to effect transport limitations and economies and the latter operating in private hands with regulations intended to expand marketing areas and with considerably less attention given to economy of movement, have nevertheless encountered a number of similar cost problems that in due time have had corresponding effects on tariffs.

An attempt has been made to compare Soviet and US rates for four important bulk commodities -- coal, gasoline, lumber, and iron ore. Of a total of 547.4 million short tons of domestic cargo shipped on US inland waterways (including the Great Lakes) in 1955, coal made up 131.5 million short tons, or 24.0 percent; gasoline, 43.1 million short tons, or 7.9 percent (all petroleum and petroleum products totaled 130.7 million short tons, or 23.9 percent); lumber and shingles, 1.2 million short tons, or 0.2 percent; and iron ore, 89.5 million short tons, or 16.4 percent. ^{65/}

River transport in the USSR carried 139.1 million tons of cargo in 1955. ^{66/} Although exact data are not available on the tonnages of lumber and iron ore carried, there are some rough estimates indicating order of magnitude. Coal constituted 8.7 million tons, or 6.3 percent of the total, and crude petroleum and products, about 13.9 million tons, or 10.0 percent. ^{67/} Wood transported in ships (rather than rafts) is estimated to have amounted to 11.5 million tons, or 8.3 percent, ^{68/} and iron ore is believed to have amounted to less than 2 million tons. Rafted logs are the class of cargo with the greatest share of tonnage on Soviet waterways. As stated above, logs constitute more than 40 percent of the total (see p. 27, above) and are estimated to have been about 56 million tons in 1955. ^{69/} Rafted

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

logs constituted 18.7 million short tons in the US in 1955, or 3.4 percent of the total US domestic inland water tonnage.

Before proceeding to the consideration of specific rates, it should be stated that among the different river navigation companies those on the Volga generally are assigned the lowest rate patterns* and that the rates become higher with progression to other river systems northward and eastward. The Lena and the Pechora lines charge the highest rates. The Amur tends to be the exception, with most of its rate patterns midway between the two extremes. For comparative purposes in the sections that follow, the Volga rates are used.

a. Coal

Under the Soviet tariff existing in 1956 and earlier, there were nine different rate patterns that applied to coal, excluding arbitraries and extra charges. 70/ Table 4** shows only those patterns which applied to the upper Dnieper and Volga Rivers and were the two lowest. Table 4 also shows the reduced rates for hauls between ports having interconnecting rail service in combined through rail and water traffic.

The new 1957 tariff employs six regular and two exceptional rate patterns for coal. The six regular schemes apply to six different groups of river navigation systems. The exceptional schemes are (1) for all water movement paralleling a rail haul and (2) for the water portion of a combined rail-water route. Table 4 shows the base rate and the two exceptional rates at various distances corresponding to lengths of haul for which US rates were available.

It will be observed that Soviet base rates were advanced considerably in 1957 above those of the previous tariff, as were also the combined rail-water rates. It will also be noted that US rates in 1957 were far below all Soviet rates up to the maximum distance for which it was possible to obtain information.

The peculiarity of the rate for all water movement parallel to a rail haul exceeding the base rate at distances of 800 km and above is readily explainable only by the fact that the exception rate applies uniformly to all river systems. When compared with the tariff for the Volga and Dneiper Rivers (the lowest in the USSR), it is portrayed in its poorest light. Logically, the lower of the two tariffs would govern in any instance where either could be applied unless an arbitrary increase is involved. The theory on which this

* Rates on the Yenisey River are lowest on towed timber rafts.

** Table 4 follows on p. 33.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 4

Comparison of Selected Inland Water Transport Rates for Coal
in the USSR, 1952-57, and the US, 1957

Distance (Kilometers)	Rates in Cents per Ton-Kilometer									
	USSR, 1957 a/ (Freight Speed)					USSR, 1952-56 b/				
	All Rivers c/					Volga River				
	US Rate July 1957 d/	Volga and Dnieper Rivers Base Rate	Water Rate Paralleling Railroad Route e/	Combined Rail-Water Rate		Base Rate	Combined Rail-Water Rate for Through Traffic	Base Rate	Combined Rail-Water Rate for Through Traffic	
261	0.423	1.006	0.872	0.556	0.738	0.508	0.508	0.508	0.354	
476	0.360	0.746	0.688	0.441	0.599	0.415	0.415	0.415	0.289	
847	0.196	0.640	0.649	0.416	0.537	0.372	0.372	0.372	0.257	
1,062	0.203	0.607	0.621	0.400	0.497	0.346	0.346	0.346	0.240	
1,939	0.187	0.547	0.560	0.358	0.400	0.278				
2,268	0.200	0.530	0.551	0.354	0.369	0.251				

a. 71/. As differentiated from the rate for "express", or full, speed (see p. 28, above).
b. Converted from official rates in rubles per ton. 72/ The "reduced" rate is two classes lower than the base rate. 73/ These rates were taken from the Soviet 1952 tariff handbook as amended to 1956.

c. If the base rate is lower, it is believed to be used instead.

d. Converted from rates filed with the Interstate Commerce Commission by the Union Barge Line Corporation jointly with other Ohio River and Mississippi River carriers. 74/ The original rates were in cents per short ton for hauls from Brownsville, Pennsylvania, and Huntington,

West Virginia, to specific ports.

e. This rate is used in conjunction with the rail distance if the latter is shorter than the river distance.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

type of rate is based is essentially a differential on the normal (without penalty) railroad rate. Examples of this rate pattern for coal show that the charges are 85 percent of the railroad charge for the shorter of the distances between two points, rail or water.

As in the USSR, inland water transport rates for coal in the US vary with the waterway. Unlike the Soviet rates, they depend on competition and certain other factors. In the US, rates are quoted for hauls between specific river ports rather than for mileages, and rates for two hauls of the same length are often not the same. Some coal rates are filed with the ICC, but most coal is moved by carriers not subject to ICC regulation. 75/ The US rates shown in Table 4** are rates filed with the ICC by certain Mississippi River System carriers for coal originating at Brownsville, Pennsylvania, on the Monongahela River and at Huntington, West Virginia, on the Ohio River, both sources of heavy coal traffic in the US.

The tendency of the inland water transport rates for coal to start high and taper off is noticeable in both the USSR and the US, with the US rate sample flattening out at about 850 km and the Soviet rates continuing to decline very slightly to their extreme limit of 5,000 km. Moreover, the rates appear to be a little lower than railroad rates all along the line. The cited US rates vary from 30 to 82 percent of present Soviet rates, the previous low Soviet inland water transport rates having been abandoned. Evidently the USSR is counting on the penalty railroad rates to make the new differential rates effective.

b. Gasoline

Representative Soviet and US rates for gasoline are compared in Table 6.*** Volga River rates have been used for the USSR, and Mississippi River rates for the US. It is apparent from the figures that the Volga River rates were cut by almost two-thirds in 1957, but the Mississippi River rates for gasoline were still from 77 to 82 percent lower than their Soviet counterparts. According to 1955 data, the Volga River carried 79.2 percent of the tonnage of bulk petroleum on Soviet rivers. 76/ In the US, 27 percent of the tonnage of petroleum and its products shipped on inland waterways in 1955 moved on the Mississippi River, below Minneapolis. 77/

* Table 5 follows on p. 35.

** P. 33, above.

*** Table 6 follows on p. 36.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 5

Comparison of Examples of Railroad Charges and "Reduced" Inland Water Transport Charges
for Coal in the USSR a/
1957

Points of Origin and Destination of Coal Shipments	<u>1957 Rubles per Metric Ton</u>		<u>"Reduced" Water Charge as a Percentage of Railroad Charge</u>	
	<u>Distance (Kilometers)</u>	<u>"Reduced" Water Charge Between Ports Served by Rail (Water Through Traffic)</u>		
	<u>Rail</u>	<u>Water</u>		
Krasnoarmeysk (Sarepta) to Gor'kiy	1,429	1,737	37.90	85
Krasnoarmeysk to Saratov	455	425	14.60	85
Stalingrad to Gor'kiy	1,403	1,710	37.90	85

a. Railroad and inland water transport charges are taken from a Soviet inland water transport journal, 78/ and distances are from this same journal, supplemented by official Soviet sources. A charge is a flat amount billed for movement of a given quantity of freight over a specific distance or an amount billed for arbitrary purposes, extra services, demurrages, and penalties.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 6

Comparison of Selected Inland Water Transport Rates for Gasoline
in the USSR, 1952-57, and the US, 1957

Rates in Cents per Ton-Kilometer				
Distance (Kilometers)	US		USSR	
	Mississippi River 1957 b/	Volga River - Moscow Base Rate 1957 c/	Volga River, 1952-56 a/	Combined Rail-Water Through Traffic
		Base Rate	Base Rate	
483	0.188	1.025	2.886	1.848
966	0.171	0.789	2.213	1.535
1,931	0.154	0.672	1.728	1.200

a. From the Soviet 1952 tariff handbook as amended to 1956. 79/
b. A Mississippi River company reported that its rates averaged about 2-3/4 mills per short-ton-mile for a 300-mile trip (483 km), 2-1/2 mills per short-ton-mile for a 600-mile trip (966 km), and 2-1/4 mills per short-ton-mile for a 1,200-mile trip (1,931 km). Rates charged by two other companies were within the same range. 80/
c. 81/

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C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Some idea of the cost of hauling petroleum on Soviet inland waterways may be obtained from a statement that revenues under the 1952 tariff were 270 percent of costs. This figure in conjunction with available information on rates for gasoline, kerosine, and other products ^{82/} gives a cost indication of between 0.4 and 0.5 cents per ton-kilometer in the 900-km-to-1,000-km zone. Thus the new rates are still more than compensatory. A typical cost for a US tow moving a similar distance would, on the basis of company information, ^{83/} be 0.145 cent per ton-kilometer. The Soviet cost for all POL movement, therefore, would be about three times the US cost of moving gasoline in tows on inland waterways. The Soviet figures used in this computation are admittedly vague, and a margin of error of as much as 25 percent is possible.

c. Iron Ore

Available Soviet and US data on costs and rates for iron ore are compared in Table 7.* Costs of a private US company hauling its own iron ore on the Great Lakes in 1957 are compared with the different Soviet rates for iron ore for the same year and with average revenues and costs per ton-kilometer for ores of all kinds on the Volga River in 1954. From the figures, the cited US costs appear to have been less than half of the average Soviet revenues per ton-kilometer in 1954, which in turn were far below Soviet costs. The Soviet rates for 1957 are all much higher, running between 4 and 5 times the US costs. Unless Soviet costs have been reduced from their 1954 level, however, losses are still indicated, and further corrections seem to be warranted.

It must be pointed out that whereas comparatively little iron ore is moved on inland waterways in the USSR, probably less than 2 million tons, the US movement was 81 million tons, or 16.4 percent of the total inland waterway tonnage in the US.

d. Lumber

In Table 8,* one US rate for hauling lumber on the Columbia River is compared with similar Soviet lumber rates. The Columbia River accounted for 21 percent of the total of 1,090,000 tons of lumber and shingles hauled in 1955 on US inland waterways. Soviet lumber loadings, although not separated from loadings of other forms of wood in Soviet announcements, probably were less than 4 million tons. Only one rate is compared because long movements of lumber are not made on the Columbia River. On this extremely short movement (89 km)***

* Table 7 follows on p. 38.

** Table 8 follows on p. 39.

*** Text continued on p. 40.

C-O-N-F-I-D-E-N-T-I-A-L

Table 7

Comparison of Selected Inland Water Transport Costs, Revenues, and Rates
for Iron Ore
in the USSR, 1954 and 1957, and the US, 1957

Rates in Cents per Ton-Kilometer						
USSR						
Distance (Kilometers)	US		Volga and Other Rivers of the European USSR		Volga River	
	Great Lakes 1957 Cost <u>c/</u>		1957 <u>a/</u>	Combined Rail-Water Rates for Through Traffic	1954 <u>b/</u>	Cost
		Base Rate for Through Traffic	Water Rate for Through Traffic		Revenues	
950	0.113	0.511	0.466	0.405	0.245	0.709

- a. ^{84/} Average per ton-kilometer for ores of all kinds. The average haul for ore was 950 km. ^{85/}
 b. Average per ton-kilometer for costs for a vessel carrying 12,962 short tons at 0.165 cent per short-ton-
 c. A US company computed its costs for a haul of 600 miles (965 km). ^{86/}
 mile (0.113 cent per ton-kilometer) for a haul of 600 miles (965 km).

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C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 8

Comparison of Selected Inland Water Transport Costs and Rates for Lumber
in the USSR, 1952-57, and the US, 1955

Rates in Cents per Ton-Kilometer

USSR

Distance (Kilometers)	US Columbia River Rate 1955 c/	Volga and Kama Rivers Base Rate 1957 a/	"Reduced" Water Rate Between Ports Served by Rail 1957 a/		Volga and Kama Rivers 1952-56 b/	Planned Cost 1956 e/
			Water Rate for Through Traffic d/	Combined Rail-Water Rate for Through Traffic	Base Rate for Through Traffic	
89	2.912	2.135	1.798	1.208	1.00	2.58

a. 87/

From the Soviet 1952 tariff handbook as amended to 1956. 88/
b. The rate filed with the Interstate Commerce Commission by the Pacific Inland Tariff Bureau for shipment of lumber from the
c. The rate filed with the Interstate Commerce Commission, was \$3.11 per thousand gross board feet. 89/ Converted at 1.2 tons per
Bonneville Dam at Cascade Locks to Portland, Oregon. The distance from Cascade Locks to Portland is 55 miles, 91/ or 89 km.
1,000 board feet, 90/ this rate was \$2.59 per ton. The distance if the latter is shorter than the river distance.
d. This rate is used in conjunction with the rail distance if the latter is shorter than the river distance.
e. 92/

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C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

the US rate is higher than the Soviet rate for a comparable distance on the Volga and Kama Rivers in the USSR and also is slightly higher than the Soviet planned cost in 1956 at this distance. Unless Soviet costs have been reduced, revenue from lumber movement on the Volga is far below cost. The 1957 rates have been doubled over the previous rates but still appear to require further increases in order to become compensatory. Costs probably would be nearly covered on longer hauls.

Rates for towing timber in rafts on the Volga, Kama, and other rivers are said to have been reduced 15 percent in the new tariff. 93/ These are among the lowest transportation rates in the USSR, varying from 0.55 cent per cubic-meter-kilometer for small rafts (2,500 cubic meters and less) on short hauls on the Volga and other rivers in the western USSR to only 0.13 cent per cubic-meter-kilometer for large rafts (10,000 cubic meters and above) on hauls of 1,500 km and longer. On the Yenisey the rates are even lower, probably to keep down costs on internal movement of timber for export. For upstream hauling of timber in rafts, however, the rates are exceptionally high, running from 1.65 cents to 2.5 cents per cubic-meter-kilometer on most rivers (the Volga is lower), and increasing rather than decreasing with the length of the haul. Timber hauling is stated to be one of the major sources of revenue for inland water transport in the USSR.

e. Conclusions

The difficulty of comparing weighted costs and rates on inland waterway transport in the USSR and the US on the basis of present information may be seen from the preceding discussion. Because freight bills are not used on a large segment of US inland water traffic and because Soviet rates bear such an uneven relationship to costs (see Table 9*), costs rather than rates appear to be the logical criterion for comparing the economics of inland water movement in the two countries. US costs are far lower than Soviet costs on the principal commodities moved in volume for which information is available. On lumber, the sole exception, where the US example involves a very short haul, costs are approximately equal.

One probable reason for the higher costs in the USSR is the Soviet practice of charging off improvements of inland waterways against traffic moved, whereas shippers in the US obtain the benefit of corresponding improvements by courtesy of the general taxpayer. Soviet propaganda, nevertheless, has steadily been directed toward emphasizing the advantages of inland water movement, and much

* Table 9 follows on p. 41.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 9

Examples of Unprofitable Inland Water Transport Rates
for Bulk Cargo in the Central Basins of the USSR a/
1957 Plan

<u>Commodity</u>	<u>1957 Rates in Percent of Planned 1957 Costs</u>
Coal	98
Salt	86
Flour and groats	96
Salted fish	89
Cotton yarn	84
Mineral fertilizers	83.5
Wood cargoes	80
Ore	74
Pig iron	67.5

a. 94/. The rates in this table presumably are base rates
at freight speeds only.

effort and expense apparently have gone into its promotion. A second reason for the higher costs in the USSR is the long period of the year when Soviet waterways are frozen and inactive. A third reason may be tardiness in technical development, and a fourth may be higher fleet maintenance charges per revenue ton-kilometer because of conditions encountered on the waterways themselves. US waterways on the whole are better favored by geography, climate, and disposition of natural resources than are Soviet waterways.

C. Highway Transport

1. Soviet Highway Transport Rates

The present highway freight tariff in the USSR is specified in a tariff handbook 95/ that was issued by the Ministry of Automobile Transport and Highways. Statistics in this handbook permit the estimating of an average vehicular rate for each of the two categories of motor carriers in the USSR, common carriers and ministerial carriers. In 1955 the common carriers originated 452 million tons and performed 9,261 million tkm. 96/ The average length of haul was 20.5 km. 97/ Ministerial carriers originated 3,277 million tons and performed 33,239 million tkm at an average length of haul of only 10.1 km. 98/ The average haul for the two together was 11.4 km. 99/

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

There are four classes of vehicular freight in the USSR. Class I consists of freight of sufficient density to utilize 100 percent of the loading capacity of the vehicle; Class II, from 71 to 99 percent; Class III, 51 to 70 percent; and Class IV, 50 percent or less. The tariff for each class provides the charge for moving 1 ton of freight a particular distance (see Figures 12* and 13*). Various items of freight are specified as to class in the official handbook, and freight not mentioned in the handbook is automatically shipped under the applicable rate for Class II freight. 100/ Length-of-haul rates per ton and per class of freight for distances up to 20 km are calculated on the basis of a 1-km zone; for distances of 21 to 50 km, on the basis of a 5-km zone; and for distances of 51 to 100 km, on the basis of a 10-km zone. The rate per kilometer for 1 ton of Class I freight shipped for a distance of 1 km is 2 rubles and 40 kopecks. For a distance of 2 km the rate is 1 ruble and 48 kopecks per ton-kilometer, or about 40 percent less. For a distance of 3 km, it is 1 ruble and 15 kopecks per ton-kilometer, or about 50 percent less than the rate for 1 km. For a distance of 5 km the rate per ton-kilometer is 92 kopecks; for a distance of 10 km, 73 kopecks; and for a distance of 15 km, 65 kopecks, or about 30 percent less than the rate for 5 km. For an increase in the length of haul from 15 to 20 km the rate per ton-kilometer of Class I freight decreases from 65 kopecks to 60.75 kopecks, or by 6.5 percent. From here on, the slope of the rate curve is increasingly mild. The curve levels out completely at 100 km. 101/

The minimum revenue distance is 1 km -- that is, shipments for a distance of less than 1 km are charged the rate for 1 km. When fractions of a kilometer occur in lengths of haul that exceed 1 km, no payment is made for fractions of less than 0.5 km. The payment for fractions of a kilometer amounting to 0.5 or more is calculated at the same rate as the next higher kilometer unit. An exception is made in the case of shipments by dump truck, where the minimum revenue distance is 0.5 km. In this case the rate per ton of dump-truck freight shipped for a distance of 0.5 km or less is 1 ruble and 80 kopecks.

A decrease of 10 percent is made in the rate for construction materials shipped in containers that allow the use of mechanical equipment in the processes of loading and unloading. An increase of 10 percent in the rate is made for shipment in closed vans, tank trucks, or insulated truck bodies. The rate also is subject to increases ranging from 5 to 60 percent where trucking is performed in mountainous or very cold areas.

* Following p. 42.

C-O-N-F-I-D-E-N-T-I-A-L

Figure 12

USSR: Sample Pages of Motor Vehicular Tariff of 1955

Утверждены Постановлением
Совета Министров СССР
от 23 июня 1955 г. № 1166

ЕДИННЫЕ ТАРИФЫ

на перевозку грузов автомобильным транспортом

1. Плата за перевозку грузов автомобильным транспортом, в зависимости от расстояния перевозок и класса грузов, устанавливается в следующих размерах.

ТАРИФНАЯ ПЛАТА

(в рублях и копейках за 1 тонну груза)

Расстояние перевозки (в км)	Классы грузов			
	1 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей 1,0	2 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей от 0,71 до 0,99	3 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей от 0,51 до 0,70	4 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей до 0,50
1	2	3	4	5
1	2-40	3 00	4-00	4-80
2	2-95	3-70	4-95	5-90
3	3-50	4-40	5-90	7-00
4	4-05	5-10	6-85	8-10
5	4-60	5-80	7-75	9-20
6	5-15	6-50	8-65	10-30
7	5-70	7-15	9-55	11-40
8	6-25	7-80	10-45	12-50
9	6-80	8-45	11-35	13-60
10	7-30	9-10	12-20	14-60
11	7-80	9-75	13-05	15-60
12	8-30	10-40	13-90	16-60
13	8-80	11-00	14-75	17-60
14	9-30	11-60	15-60	18-60
15	9-80	12-20	16-40	19-60
16	10-30	12-80	17-20	20-60
17	10-80	13-40	18-00	21-60
18	11-25	14-00	18-75	22-50

These two pages contain virtually the entire means for computing basic shipping charges under the Soviet vehicular tariff of 1 July 1955. (Exceptions and extra charges appear separately on other pages.) The left-hand column gives lengths of haul by kilometer up to 20 km and by zones of 5 to 10 km up to 100 km. The other four columns quote the charges in rubles and kopecks per ton of goods shipped for each of the four rate classes. The latter are based on the percentage of vehicle carrying capacity utilized. For distances of above 100 km a formula giving a straight charge per ton kilometer for each rate class appears at the bottom of the page. For shorter distances the unit rate per ton kilometer is derived by dividing the charge by the distance. It will be noted that the vehicular tariff is not concerned with commodities or commodity groups as such but rather with relative efficiency in the utilization of loading capacity.

28423 2-60

Продолжение

Расстояние перевозки (в км)	Классы грузов			
	1 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей 1,0	2 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей от 0,71 до 0,99	3 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей от 0,51 до 0,70	4 грузы, обеспеч. коэфф. использо- вания грузо- подъемности автомобилей до 0,50
1	2	3	4	5
19	11-70	14-60	19-50	23-40
20	12-15	15-20	20-25	24-30
21-25	13-50	17-00	22-50	27-00
26-30	15-75	19-80	26-25	31-50
31-35	17-90	22-35	29-90	35-80
36-40	19-90	24-85	33-25	39-80
41-45	21-85	27-30	36-40	43-70
46-50	23-60	29-50	39-40	47-20
51-60	26-10	32-30	43-40	52-10
61-70	29-10	36-30	48-40	58-10
71-80	31-80	39-70	53-00	63-50
81-90	33-80	42-30	56-50	67-60
91-100	36-00	45-00	60-00	72-00
свыше 100 км	+36 коп. за каждый тон- но-километр свыше 100 км	+45 коп. за каждый тон- но-километр свыше 100 км	+60 коп. за каждый тон- но-километр свыше 100 км	+72 коп. за каждый тон- но-километр свыше 100 км

Примечания: 1. При перевозке грузов в автомобилях со специализированными кузовами (фургонах и изотермических) тарифная плата за 1 тонну груза повышается на 10%.

2. При перевозке строительных материалов в контейнерах и пакетах с механизированной погрузкой и разгрузкой тарифная плата снижается на 10%.

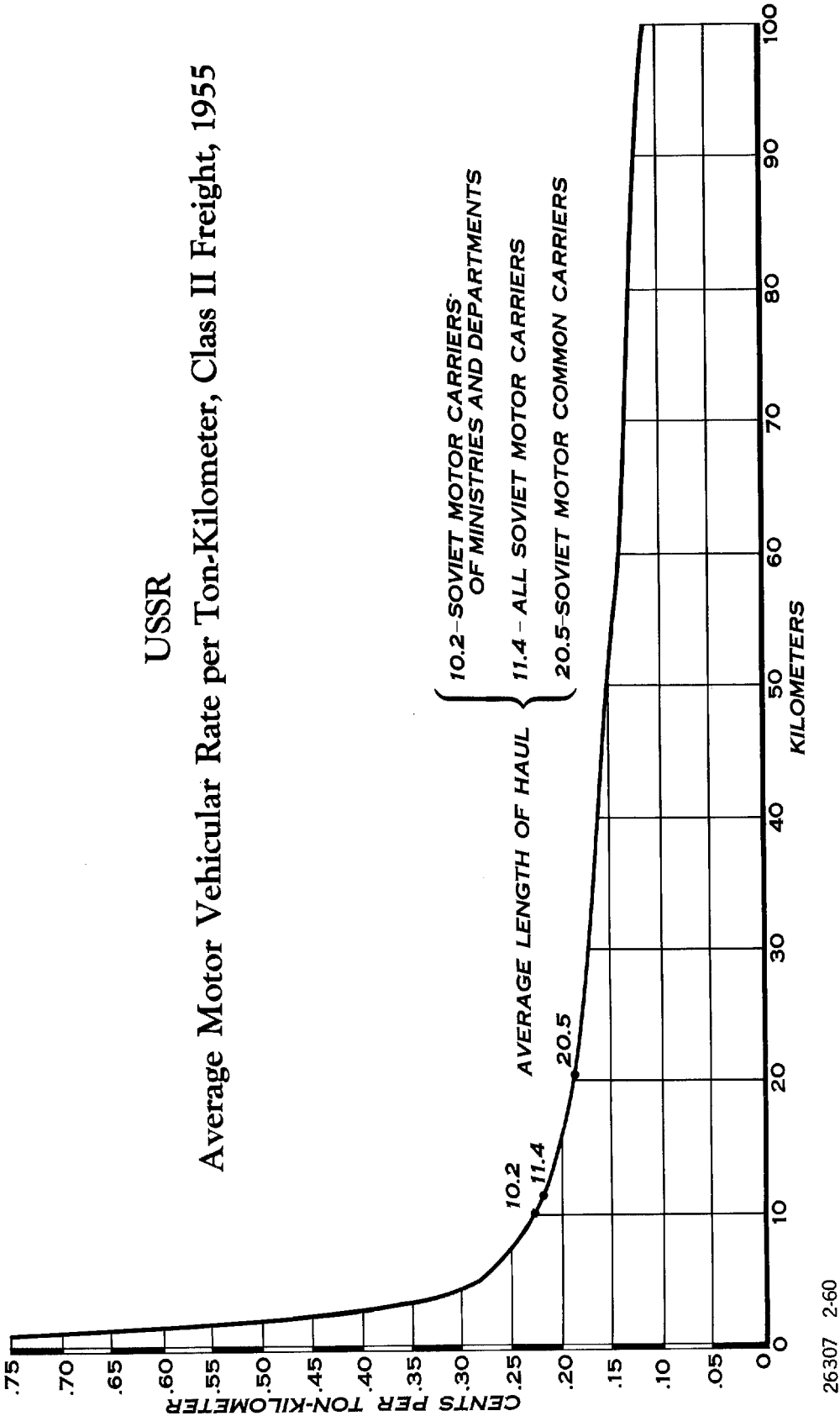
2. Плата из покилометрового расчета взимается в следующих размерах (за километр пробега):

для автомобилей грузоподъемностью до 1,5 тонны включительно—90 копеек;

для автомобилей грузоподъемностью свыше 1,5 до 2,5 тонны включительно—1 рубль;

6

Figure 13



C-O-N-F-I-D-E-N-T-I-A-L

For estimating purposes, if the rate for Class II freight (presumed to be the most typical vehicular rate in the USSR) is applied to the average length of haul of 11.4 km for the motor carriers, the average rate per ton-kilometer in 1955 would approximate 89 kopecks, or 22.25 cents. The cost per ton-kilometer performed by Soviet motor carriers was 19 cents. ^{102/} A net gain (accumulation) to the state of 3.25 cents per ton-kilometer is therefore indicated. On this basis, income would be 17 percent above the cost of shipping by motor carrier. Thus Soviet pricing policies result in a considerable net gain to the state for each ton-kilometer performed when the average length of haul is 11.4 km. If the length of haul should increase, it is probable that the margin of profit would be even greater, because terminal and empty-haul costs, by being spread out, would diminish more rapidly on a ton-kilometer basis than would the Class II rate under the existing (1955) tariff.

Motor vehicle rates in the USSR are prohibitively higher than railroad rates for medium and long distances, but for distances of 50 km or less they are competitive for many commodities. The rate curves for Soviet vehicles do not change so abruptly as do those for Soviet railroads at the shorter distances, because the Soviet motor vehicle tariff is designed primarily to accommodate short-haul movements. The railroad unit rates, on the other hand, are far higher for short distances than for the longer hauls and in some important instances are supplemented by arbitrary increases and penalties.

2. Comparison with Rates in the US

Total vehicular short-ton-miles in the US are reported and published by the ICC for common carriers, for-hire carriers, and private carriers in intercity traffic. In 1955 the figure was 226.2 billion short-ton-miles.* ^{103/} This total does not include short-ton-miles of intracity or local movements but does contain a certain amount of ton-mileage moved within city limits on intercity hauls. Revenue figures corresponding to this total ton-mileage are not available, but on a segment comprising only Class I** common and contract intercity motor carriers the ICC receives and accumulates data on both freight revenue and short-ton-miles. Thus it is possible to calculate an average ton-kilometer

* This figure was not used in computing the estimated share of the total US internal transport handled by motor vehicles in 1955 (see the footnote on p. 25, above); because, in omitting intracity movement, it does not correspond to the Soviet total.

** US motor carriers are divided into three classes, as follows: Class I, having annual gross incomes of \$200,000 or more; Class II, from \$50,000 to \$199,999; and Class III, less than \$50,000.

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rate for all freight moved by these particular carriers. ^{104/} No comprehensive statistics are available for the movement of individual commodities, and no official sampling procedure has yet been used to ascertain the relative effectiveness of individual rates. Moreover, no revenue data for US intracity carriers engaged in local cartage and delivery, construction activities, and the like are known to be kept.

For the US the average rates for Class I common and contract intercity motor carriers together are representative as rates for only about 29 percent of the total movement performed by all categories of intercity carriers reporting to the ICC. ^{105/} These rates are derived from the operating statistics of 2,036 intercity Class I common and contract motor carriers reporting revenue ton-miles in 1955. Total and ton-kilometers amounted to 97,161 million and revenue to \$3,813 million, with an average rate per ton-kilometer of 3.924 cents. The average rate per ton-kilometer for common carriers only was 3.971 cents. The average length of haul per ton for common carriers was 378 km; for contract carriers, 224 km; and for the two taken together, 361 km. In the US in 1955, each ton-kilometer performed by Class I intercity motor common carriers is reported to have cost the carrier an average of 3.909 cents.* ^{106/} This figure, however, is believed to stem from a total expense figure that included costs of local movements for which revenues were not reported. The indicated margin of profit of only 0.062 cent per ton-kilometer may be unrealistically low, but the actual profit probably is not high. Competition from private vehicular carriers** is the largest single factor in holding down US rates to levels so close to cost. The costs of private carriers can be kept low by numerous favorable factors, chief among them being ownership by businesses that make up and control all shipments and, in the case of smaller truckers, the ability to avoid dealing with high-cost labor. To some extent, basic costs are not the primary consideration in the movement of goods by private carrier. On the other hand, private carriers are not so well situated as are common and contract carriers for the purpose of obtaining freight for return hauls.

A meaningful comparison of rates in the USSR and the US is difficult to make owing to the lack of equivalent data for the two countries. The closest comparison that can be made from the data discussed is as follows. The tariff rate for Soviet Class II motor freight, ^{107/} if applied to a length of haul of 378 km (which was average for US Class I intercity common carriers in 1955 ^{108/}), would be 45 kopecks (11.25 cents) per ton-kilometer, compared with the

* Including depreciation and operating taxes.

** In this research aid a private highway carrier is defined as any nongovernment carrier of freight other than a common or a contract carrier using the highways.

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rate of 3.971 cents for Class I intercity common carriers in the US in 1955. 109/ Thus the Soviet rate would be 2.83 times as high per ton-kilometer at the US average length of haul as was the US rate. Whereas, in practice, there are only a few instances of hauls of this length in the USSR, this comparison does bring out the extreme difference between the effect on rates of rigid regulation for the purpose of economy and the effect of open competition under circumstances of an abundance of vehicles, low costs, and relatively low capital requirements (as in US truck transport). The rate level of private vehicular carriers is the critical factor in limiting the revenues of highway transport in the US.

D. Pipeline Transport

1. Soviet Costs

The Ministry of the Petroleum Industry of the USSR, which is responsible for production, distribution, and marketing of crude and refined petroleum, also owns and operates the available petroleum pipelines in that country. The pipeline system, therefore, operates as a private carrier and is in no sense a common carrier offering its services to shippers generally. For this reason, no rates for the transportation of petroleum have been announced for the USSR, and no rates are believed to exist. The only measure of the price paid for the transportation of petroleum by pipeline in the USSR, therefore, is the cost.

A few announcements indicative of the level at which costs may be running have become available. Minister of Railroads Beshchev stated in a speech of February 1955 that the average cost of transporting petroleum products by pipeline was one-fourth to one-third the cost of movement by rail. 110/ Based on stated railroad costs for the distance of the average rail haul for gasoline in 1955 (1,309 km), approximately 1 cent per ton-kilometer, 111/ the cost of moving gasoline this distance by pipeline would be 0.25 to 0.33 cent per ton-kilometer. An East German publication stated that the cost of moving petroleum (presumably crude oil) from Tuymazy to Irkutsk (4,800 km) by pipeline would be from one-seventh to one-sixth of rail transport costs. 112/ The railroad tariff for moving crude oil this distance was 0.97 cent per ton-kilometer, and the cost was calculated to be about 0.9 cent. 113/ The pipeline cost thus would be 0.125 to 0.15 cent per ton-kilometer for pipe of this size and for so long a distance. A Moscow publication of June 1957 stated that rail transport of petroleum products from Subkhankulova to Omsk was currently costing \$13.40 per ton, whereas the pipeline cost was but \$3.35, or one-fourth as

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much.* 114/ On a ton-kilometer basis the pipeline cost in this instance works out to about 0.375 cent.

The foregoing figures may be checked by an announcement that Soviet pipelines are expected to perform the movement of 83 billion tkm of petroleum and its products in 1960 at a saving of about \$500 million in comparison with moving this amount by rail. 115/ On the assumption from published data of an average railroad cost in 1955 of 0.93 cent per ton-kilometer, 116/ the indicated saving of 0.6 cent by use of pipelines would leave a balance of 0.33 cent per ton-kilometer for average pipeline costs.

2. Comparison with Costs in the US

In the US the only statistics submitted to the ICC that can be used to determine average revenues and costs per barrel-mile, and hence per ton-kilometer, relate to interstate trunklines. Such lines are common carriers in that they move products of more than one company.** For these carriers, operating revenues and expenses, barrel-miles of crude oil and refined petroleum products transported, and number of barrels of crude and refined products originated are reported.

Of the total of 86 companies reporting to the ICC in 1955, 80 transported POL by trunk pipeline. Total transportation by trunkline amounted to about 221.1 billion tkm; trunkline revenues, to about \$558.1 million; and trunkline expenses, to \$263.8 million. 117/ An average revenue of 0.2525 cent and an average cost of 0.1194 cent per ton-kilometer, covering both crude and refined petroleum together, are derived from the above figures.

The total figures for trunkline revenues and expenses in 1955, as published by the ICC, were not subdivided according to revenues or expenses pertaining to transportation of crude oil alone or refined petroleum products alone, but 16 of the 86 companies reporting to the ICC transported only crude oil, and 20 transported only refined petroleum products. From the data of the 16 companies transporting only crude oil by trunkline, a weighted average revenue of 0.1477 cent and a cost of 0.0550 cent per ton-kilometer were derived. As for the 20 companies transporting only refined petroleum products by trunkline, the revenue per ton-kilometer amounted to 0.4015 cent, and the cost amounted to 0.1814 cent. 118/

Recently, two detailed studies of petroleum pipeline transportation have become available, one Soviet and one US, which make possible a comparison of costs by size of pipe used and by volume of

* This pipeline was 20 inches in diameter.

** Barrel-miles performed in gathering lines are omitted.

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flow obtained, as shown in Table 10. The years for which these cost values were obtained were 1955 in the case of the USSR and 1952 in the case of the US, so that the data are not exactly parallel.

Table 10

Comparison of Data on Operating Costs
for Movement of Petroleum by Pipeline
in the USSR, 1955, and the US, 1952

		Cent per Ton-Kilometer		
Country	Year	15-Inch Pipe Moving 3 Million Metric Tons per Year	20-Inch Pipe Moving 7 Million Metric Tons per Year	24-Inch Pipe Moving 10 Million to 12 Million Metric Tons per Year
USSR a/	1955	0.44	0.25	0.225
US b/	1952	0.10	0.065	0.05

a. 119/b. 120/

This comparison shows Soviet costs running uniformly at a ratio of about four times US costs, whereas the averages derived from other data (USSR, 0.33 cent per ton-kilometer, and US, 0.1194 cent per ton-kilometer, both for 1955) are in a relationship of approximately three to one. The difference in years may be partly responsible, as US costs have increased since 1952. Another important factor may be the comparative length of haul, which in 1955 and previous years is believed to have been much longer in the US than in the USSR. Opening of the long pipelines of large diameter, planned and under construction, leading from the Ural-Volga field in both easterly and westerly directions, should in the future have the effect of reducing the unit cost of Soviet petroleum movement. Modern pumping stations, lacking in 1955, are slated for installation. Also, the rate of depreciation of capital investment, which is an annual charge to costs, probably is higher in the USSR than in the US, as there are indications in the railroad sector that the USSR prefers to amortize new fixed investments as rapidly as savings will permit. This practice has the effect of boosting stated costs in the early years of pipeline usage to a level higher than is the case later on. In the US, on the other hand, many pipelines have been in existence for 20 or more years, and, except for extensions and betterments, have been written off to such an extent that annual depreciation charges are minor.

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APPENDIX A

METHODOLOGY

The methodology used in preparing this research aid was mainly the statistical analysis of available Soviet tariff schedules in force recently and at the present time. In addition to the basic data on railroad tariff schedules, texts written by Soviet railroad experts and by bureau heads and officers of the Ministry of Railroad Transport were studied to obtain summarized information, data on practical application of the tariffs, comments, and criticisms. These volumes also have yielded up-to-date information on Soviet transportation problems involving tariffs and costs and have been valuable in clarifying many of the questions that naturally arise from an analysis of the rates, rules, exceptions, and penalties as they are stated in the tariff handbooks.

For US railroad rates the ICC One Percent Samples of Freight Terminations has been the main source of statistical information because the US Uniform Freight Classification No. 1 of 1952 contains no actual rates but rather a method of computing rates that is then applied to different situations in various areas. To accompany the statistical answers that have been developed from the sample data, recent texts by leading US authorities on railroad economics, describing rate structures as they have been formed and as they exist today, have been consulted and are interpreted particularly as they fit the comparisons that are discussed in this research aid.

The over-all average freight rate in the US per short-ton-mile (converted herein to metric ton-kilometers) is taken directly from ICC publications. The Soviet rate has been developed from a series of open Soviet sources that when combined have made it possible to set up an array of figures for the gross freight revenue for a period of 5 years. These figures, in rubles, were divided by the officially published figures on revenue ton-kilometers in order to produce the over-all average rate per ton-kilometer.

For inland water transport, Soviet rates were obtained from the official handbook, Tarifnoye rukovodstvo N 3-R, Tarify rechnogo transporta na perevozki грузов, buksirovku plotov i sudov (Tariff Handbook No. 3-R, River Transport Tariff for Hauling Freight and for Towing Rafts and Vessels), published in Moscow in 1957. An effort was made to obtain comparable US rates and costs on major commodities from both the ICC and private carriers through collection channels. For calculating ton-kilometer rates for purposes of comparison, US waterway distances were obtained from the US Army Engineers. ICC data were used only on coal

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and lumber rates in the preparation of this phase of this research aid, because nonreporting private carriers perform so much of the task of inland water movement.

In endeavoring to produce comparable rates for highway transport, the Soviet vehicle tariff that went into effect on 1 July 1955 was used as the basic document on the Soviet side, there being no detailed information available on the previous tariff. For the US, data were selected from the ICC publication, Transport Statistics in the United States for the Year Ended December 31, 1955, Part 7, Motor Carriers, 1957, the purpose being to provide the largest possible sample of strictly comparable statistics on rates, costs, and average length of haul. No commodity rates or comprehensive cost statistics were available for vehicles.

In the petroleum pipeline comparison, there were no comprehensive Soviet tables, and reliance had to be placed on a combination of announcements and press reports to develop cost samples and over-all average costs. In the US the ICC publication, Transport Statistics in the United States for the Year Ended December 31, 1955, Part 6, Oil Pipelines, provided figures on a large portion of US pipeline movement of petroleum and its products, selections from which yielded samples that appeared plausible if not completely adequate for purposes of comparison. In neither the US nor the USSR could average costs for a particular year be pinpointed separately for crude oil and petroleum products, and figures within a reasonable range of error had to be accepted.

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APPENDIX B

GAPS IN INTELLIGENCE

Information that would be most helpful in analyzing the economics of inland transport would be contained in studies of the earning power of individual rates based on the traffic patterns of the principal commodities moving in the USSR and in the US. Specific application of rates needs to be established for the most important locales of movement. This information probably exists in various ministries of the USSR and in some industrial associations of the US, but it is neither widely distributed nor readily available. Needed also for a critical analysis of the basis of railroad rate earning power in the USSR are separate income figures for each major commodity, which would include the effect of exceptional tariff rates, arbitrary rates, penalties, fines, and miscellaneous services in addition to the normal tariff.

Undoubtedly there are many more good Soviet texts on the subject of railroad rates than have been read in the course of preparation of this research aid, and probably a number of them are available in open sources at present. Collecting them and culling out the information might yield a wealth of further information on the breakdown of rate income; on exceptions, arbitraries, penalties, and the like; and on methods of cost accounting. The effort required, however, would be out of all proportion to present intelligence objectives.

Inland water rates in the US are published for numerous hauls, but there is considerable variation in the rate per ton-kilometer for individual commodities. Only a study of numerous samples could produce representative ton-kilometer ratings, and, in view of the extremely large share of the traffic handled by private carriers that file no tariff rates, the significance of such a study would be questionable.

Although performance statistics and rates for motor vehicle transport for the USSR are fairly clear, not much is known about costs or methods of operation, and it is not certain to what extent available figures represent total truck transport in the country. US income and cost statistics are very incomplete insofar as private carriers are concerned, so that the whole sector has to be disregarded in obtaining averages. It is doubtful whether this gap can readily be filled, but data on contract carrier operations and rates may be improved.

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APPENDIX C

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this research aid. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

1. International Arts and Sciences Press. Problems of Economics, May 58, p. 53. U. Eval. Doc.
2. USSR, Ministry of Railroad Transport. Tarifnoye rukovodstvo N 1. Pravila primeneniya tarifov, nomenklatura грузов, obshchiye, isklyuchitel'nyye i sluzhebnyye tarify. Vvedeno v deystviye s 1 Iyul'ya 1955 g. (Tariff Handbook No. 1 Rules for Using Tariffs; Nomenclature of Freight; and General, Exception, and Service Tariffs. Effective from 1 July 1955), Moscow, 1955. U. Eval. Doc. (hereafter referred to as USSR, Ministry of Railroad Transport. Tarifnoye)
3. Khanukov, Ye.D. Transport i razmeshcheniye proizvodstva (Transportation and the Distribution of Production), Moscow, 1955, p. 381-385. U. Eval. Doc.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

4. Ibid., p. 377. U. Eval. Doc.
5. Arkhangel'skiy, A.S., et al. Spravochnik po tarifam zhelez-nodorozhnogo transporta (Handbook on Railroad Freight Tariffs), Moscow, 1955, p. 32-35, item 4. U. Eval. Doc.
6. Khanukov, op. cit. (3, above), p. 381. U. Eval. Doc.
7. Ibid., p. 384. U. Eval. Doc.
8. USSR, Ministry of Railroad Transport. Tarifnoye (2, above), p. 138-139. U. Eval. Doc.
9. Arkhangel'skiy, et al., op. cit. (5, above), p. 32, item 1. U. Eval. Doc.
10. Ibid., p. 32-55, item 8. U. Eval. Doc.
11. Ibid., p. 36, item 1. U. Eval. Doc.
12. Khanukov, op. cit. (3, above), p. 380. U. Eval. Doc.
13. Arkhangel'skiy, et al., op. cit. (5, above), p. 37. U. Eval. Doc.
14. Ibid.
15. Ibid., p. 38-42. U. Eval. Doc.
16. Ibid., p. 42-43. U. Eval. Doc.
17. Ibid., p. 44-51. U. Eval. Doc.
18. Ibid., p. 55. U. Eval. Doc.
19. USSR, Ministry of Railroad Transport. Tarifnoye (2, above), p. 139. U. Eval. Doc.
20. Ibid., p. 25-26. U. Eval. Doc.
21. Ibid., p. 11. U. Eval. Doc.
22. Ibid., p. 9. U. Eval. Doc.
23. Ibid., p. 34. U. Eval. Doc.
24. Ibid., p. 23-25. U. Eval. Doc.
25. Ibid., p. 28. U. Eval. Doc.
26. Ibid., p. 15-19. U. Eval. Doc.
27. Ibid., p. 34. U. Eval. Doc.
28. Ibid., p. 24. U. Eval. Doc.
29. Arkhangel'skiy, et al., op. cit. (5, above), p. 44. U. Eval. Doc.
30. USSR, Ministry of Railroad Transport. Tarifnoye (2, above), p. 30-33. U. Eval. Doc.
31. Locklin, D. Philip. Economics of Transportation, Homewood, Ill., 1954, p. 175. U. Eval. RR 1.
32. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Economics, Mar 57, p. 7. U. Eval. Doc.
33. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Statistics in the United States for the Year Ended December 31, 1955, Part 7, Motor Carriers, 1957, p. 76, 80. U. Eval. Doc.
34. CIA. FDD Summary no 566, 29 Jun 56, p. 186. OFF USE. Eval. Doc.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

35. Association of American Railroads. Statistics of Railways of Class I, United States, Calendar Years 1946 to 1955, Oct 56, p. 11. U. Eval. Doc.
36. Voprosy ekonomiki, no 11, Nov 57, p. 113. U. Eval. Doc.
37. Association of American Railroads. Statistical Summary, no 42, Aug 58, p. 11. U. Eval. Doc.
- Eastern Railroad Presidents Conference. Yearbook of Railroad Information, Apr 59, p. 49. U. Eval. RR 2.
38. Khanukov, op. cit. (3, above), p. 378. U. Eval. Doc.
39. Landon, Charles E. Transportation, New York, 1951, p. 288. U. Eval. RR 1.
40. Locklin, op. cit. (31, above), p. 459-460. U. Eval. RR 1.
41. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Economics, Aug 57, p. 9. U. Eval. Doc.
42. Khanukov, op. cit. (3, above), p. 375-378. U. Eval. Doc.
43. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Statement MB-6, Year 1955, Carload Waybill Statistics, 1955; Mileage Block Progressions, Traffic and Revenue by Commodity Groups and Classes; One Percent Sample of Terminations in 1955, Mar 57. U. Eval. Doc.
44. CIA. FDD Summary no 566, 29 Jun 56, p. 186. OFF USE. Eval. Doc.
45. Khanukov, op. cit. (3, above), p. 348, 378. U. Eval. Doc.
46. International Arts and Sciences Press. Problems of Economics, May 58, p. 53. U. Eval. Doc.
47. Ibid., p. 377. U. Eval. Doc.
48. Khanukov, op. cit. (3, above), p. 238. U. Eval. Doc.
49. Ibid., p. 378. U. Eval. Doc.
50. Landon, op. cit. (39, above), p. 288. U. Eval. RR 1.
51. [REDACTED]
52. USSR, Ministry of Railroad Transport. Tarifnoye (2, above), p. 16-17. U. Eval. Doc.
53. Arkhangel'skiy, et al., op. cit. (5, above), p. 55. U. Eval. Doc.
54. CIA. FDD Translation no 681, 24 Jan 58, p. 7. OFF USE. Eval. Doc.
55. Commerce, Bureau of the Census. Statistical Abstract of the US, 1959, 1959, p. 565. U. Eval. Doc.
56. Interstate Commerce Commission. 70th Annual Report, Fiscal Year Ended June 30, 1956, 1956, p. 43. U. Eval. Doc.
57. Department of Commerce, Bureau of Public Roads. Highway Statistics, Summary to 1955, 1957, p. 39. U. Eval. Doc.
58. Automobile Manufacturers Association, Detroit, Michigan. Motor Truck Facts, 1956, p. 37. U. Eval. Doc. (Data given as obtained from the Bureau of Public Roads)

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

59. USSR, RSFSR, Ministry of the River Fleet, et al. Tarifnoye rukovodstvo N 3-R. Tarify rechnogo transporta na perevozki грузов, buksirovku plotov i sudov (Tariff Handbook No. 3-R, River Transport Tariff for Hauling Freight and for Towing Rafts and Vessels), Moscow, 1957. U. Eval. Doc. (hereafter referred to as USSR, RSFSR, Ministry of the River Fleet. Tarifnoye)
60. USSR, Committee of the Council of Ministers on Construction. Tsennik N 3 smetnykh tsen na perevozki грузов dlya stroitel'stva. Chast'V. Tarify na perevozki грузов rechnym transportom (Price List No. 3 of Estimate Prices for Hauling Freight for Construction. Part V, Rates for Hauling Freight by River Transport), Moscow, 1956, p. 4. U. Eval. Doc. (hereafter referred to as USSR. Tsennik).
61. CIA. FDD Summary no 1449, 29 Aug 57, p. 43. OFF USE. Eval. RR 1.
62. Landon, op. cit. (39, above), p. 436. U. Eval. RR 1.
63. Ibid., p. 438. U. Eval. RR 1.
64. Army, Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1955, Part 5, National Summaries, p. 8. U. Eval. Doc.
Ibid., Part 2, Waterways and Harbors: Gulf Coast, Mississippi River System and Antilles, p. 168. U. Eval. Doc.
65. Army, Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1955, Part 5, National Summaries, p. 6-9. U. Eval. Doc.
66. USSR, Central Statistical Administration. Narodnoye khozyaystvo SSSR v 1956 godu: statisticheskiy yezhegodnik (The National Economy of the USSR in 1956: a Statistical Yearbook), Moscow, 1957, p. 181. U. Eval. Doc. (hereafter referred to as USSR. Narodnoye)
67. Voprosy ekonomiki, Jul 56, p. 16. U. Eval. Doc.
68. Rechnoy transport, Jan 57, p. 2. U. Eval. Doc.
USSR, Ukrainian SSR, Central Statistical Administration. Narodne hospodarstvo Ukrayinskoyi RSR, statistichniy zbirnik (The National Economy of the Ukrainian SSR: a Statistical Compilation), Kiev, 1957, p. 378-379. U. Eval. Doc.
Vestnik statistiki, Mar-Apr 57, p. 87. U. Eval. Doc.
69. CIA. FDD Summary no 1449, 29 Aug 57, p. 43. OFF USE. Eval. RR 1.
Vestnik statistiki, Mar-Apr 57, p. 87. U. Eval. Doc.
70. USSR. Tsennik (60, above), p. 4. U. Eval. Doc.
71. USSR, RSFSR, Ministry of the River Fleet. Tarifnoye (59, above), p. 92-98. U. Eval. Doc.
72. USSR. Tsennik (60, above), p. 12, 15-19, 57. U. Eval. Doc.
73. Ibid., p. 7. U. Eval. Doc.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

74. Interstate Commerce Commission. ICC No. 16, Union Bargeline Corporation, Freight Tariff No. 100-E, Issued 25 May 57, Effective 25 June 1957, Pittsburgh, 1957, p. 80. U. Eval. Doc.
75. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Statistics in the United States for the Year Ended December 31, 1955, Part 5, Carriers by Water, 1956, p. 43. U. Eval. Doc.
76. CIA. FDD Translation no 681, 24 Jan 58, p. 120, 140. OFF USE. Eval. Doc.
77. Army, Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1955, Part 5, National Summaries, p. 8-9. U. Eval. Doc.
American Waterways Operation, Inc. New Dimensions in Transportation, 1956, p. 46. U. Eval. RR 1.
- 25X1A 78. CIA. FDD Summary no 1410, 30 Jul 57, p. 39. OFF USE. Eval. RR 2.
79. USSR. Tsennik (60, above), p. 7, 9, 15-19. U. Eval. Doc.
80. [REDACTED]
- 25X1A 81. USSR, RSFSR, Ministry of the River Fleet. Tarifnoye (59, above), p. 294, 296, 299. U. Eval. Doc.
82. USSR. Tsennik (60, above), p. 9, 11, 15-19. U. Eval. RR 1.
83. [REDACTED]
84. USSR, RSFSR, Ministry of the River Fleet. Tarifnoye (59, above), p. 94, 174. U. Eval. Doc.
- 25X1A 85. CIA. FDD Summary no 1410, 30 Jul 57, p. 34. OFF USE. Eval. RR 2.
86. [REDACTED]
87. USSR, RSFSR, Ministry of the River Fleet. Tarifnoye (59, above), p. 90, 183. U. Eval. Doc.
88. USSR. Tsennik (60, above), p. 11, 15, 54. U. Eval. Doc.
89. Interstate Commerce Commission. ICC No. 2, Pacific Inland Tariff Bureau, Inc., Agent, Issued 12 July 1949, Effective 20 August 1949, p. 46. U. Eval. Doc.
90. UN, FAO. Yearbook of Forest Products Statistics, 1956, Rome, 1956, p. 154. U. Eval. Doc.
91. Army, Office of the Chief of Engineers. List of Bridges over the Navigable Waters of the United States, Washington, revised to 1 Jan 48, p. 98. U. Eval. Doc.
92. CIA. FDD Summary no 1410, 30 Jul 57, p. 41. OFF USE. Eval. RR 2.
93. Ibid., p. 37. OFF USE. Eval. RR 2.
94. Ibid., p. 41. OFF USE. Eval. RR 2.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

95. USSR, Ministry of Automobile Transport and Highways. Spravochnik yedinykh tarifov na perevozku грузов avtomobil'nykh transportom (A Handbook of Unified Tariffs for the Shipment of Freight by Motor Transport), Moscow, 1955. U. Eval. Doc. (hereafter referred to as USSR. Spravochnik)
96. USSR. Narodnoye (66, above), p. 197. U. Eval. Doc.
97. Ibid.
98. Ibid.
99. Ibid.
100. USSR. Spravochnik (95, above), p. 21-31. U. Eval. Doc.
101. Ibid., p. 5, 6. U. Eval. Doc.
102. USSR, Ministry of Automobile Transport and Highways. Avtomobil'nyy transport (Motor Transport), Moscow, Mar 57, p. 5. U. Eval. Doc.
103. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Economics, Oct 57, p. 7. U. Eval. Doc.
104. Ibid., p. 76, 80. U. Eval. Doc.
105. Ibid.
Ibid., Oct 56, p. 6. U. Eval. Doc.
106. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Statistics in the United States for the Year Ended December 31, 1955, Part 7, Motor Carriers, 1957, p. 76. U. Eval. Doc.
107. USSR. Spravochnik (95, above), p. 6. U. Eval. Doc.
108. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Statistics in the United States for the Year Ended December 31, 1955, Part 7, Motor Carriers, 1957, p. 76. U. Eval. Doc.
109. Ibid.
110. Izvestiya, 8 Feb 55. U. Eval. Doc.
111. Khanukov, op. cit. (3, above), p. 378. U. Eval. Doc.
112. [REDACTED]
113. Khanukov, op. cit. (3, above), p. 378. U. Eval. Doc.
114. Na stroitel'stve truboprovodov, 16 Jun 57, p. 1. U. Eval. Doc.
115. Ibid., 10 Apr 57, p. 1. U. Eval. Doc.
116. Khanukov, op. cit. (3, above), p. 378. U. Eval. Doc.
117. Interstate Commerce Commission, Bureau of Transport Economics and Statistics. Transport Statistics in the United States for the Year Ended December 31, 1955, Part 6, Oil Pipe Lines, 1956, p. 10-13, 24-31. U. Eval. Doc.
118. Ibid.
119. Nakrasov, N.N. Ekonomika promyshlennosti i tekhnicheskii progress (Economics of Industry and Technical Progress), Moscow, 1957, p. 48. U. Eval. RR 2.
120. Meyer, John R., et al. The Economics of Competition in the Transportation Industries, Cambridge, Mass., 1959, p. 129-131. U. Eval. RR 2.

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